11-5820-562-14

TM 11-5820-562-14

TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS

REPEATER SETS, RADIO

AN/TRC-113(V)1 AN/TRC-113(V)2, AN/TRC-113(V)3, AN/TRC-113A(V)1, AN/TRC-113A(V)2, AND AN/TRC-113A(V)3

(FSN 5820-868-8211)

HEADQUARTERS, DEPARTMENT OF THE ARMY

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No. 6

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 July 1989

Operator's, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools List

Radio Repeater Set AN/TRC-113(V)1, AN/TRC-113(V)2, AN/TRC-113(V)3, AN/TRC-113A(V)1, AN/TRC-113A(V)2 and AN/TRC-113A(V)3

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To be distributed in accordance with DA Form 12-51 operator, unit, and DS/GS requirements for AN/TRC-113.

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DEPARTMENT OF THE ARMY
Washington, DC, 7 February 1985

OPERATOR'S ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS

REPEATER SETS, RADIO

AN/TRC-113(V)1, AN/TRC-113(V)2, AN/TRC-113(V)3, AN/TRC-113A(V)1, AN/TRC-113A(V)2, AND AN/TRC-113A(V)3

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C. *1 June 1983*

Operator, Organizational, Direct Support
And General Support Maintenance Manual
INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS
REPEATER SETS, RADIO
AN/TRC-113(V)1, AN/TRC-113(V)2, AN/TRC-113(V)3, AN/TRC-113A(V)1, AN/TRC-113A(V)2, AND AN/TRC-113A(V)3
(NSN 5820-00-868-8211)

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4-1 and 4-2	4-1 and 4-2
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The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-51, Operator's Maintenance requirements for AN/TRC-113.

WARNING

HIGH VOLTAGE
is used in the equipment
DEATH ON CONTACT
MAY RESULT IF SAFETY PRECAUTIONS
ARE NOT OBSERVED

Maintenance adjustments of this equipment are made with power applied. Be careful when working near the interior of the equipment or near the ac power distribution.

WARNING

VENTILATION IS ESSENTIAL

To prevent asphyxiation, ventilate the AN / TRC-113 at all times when it is occupied.

DON'T TAKE CHANCES

Operator and maintenance personnel should be familiar with the requirements of TB SIG 291 before attempting installation or operation of the equipment covered in this manual. Failure to follow requirements of TB SIG 291 could result in injury or DEATH. Prior to erecting the antenna, read the WARNING and SAFETY pages in chapter 2.

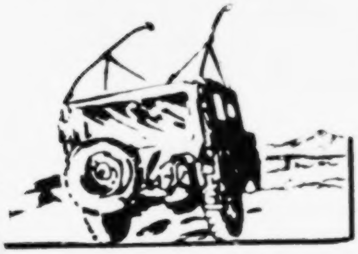
WARNING

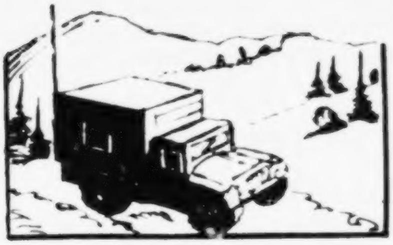
SERIOUS INJURY OR EVEN DEATH CAN HAPPEN IF THE FOLLOWING ARE NOT CAREFULLY OBSERVED WHEN INSTALLING AND USING THE ANTENNAS USED WITH YOUR RADIO SETS.

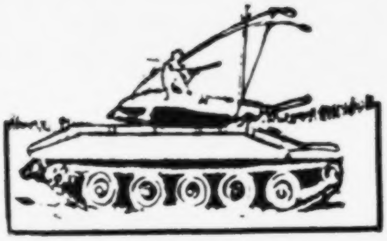
BEFORE ANY MISSION FIND OUT

1. ARE THERE ANY POWERLINES IN YOUR AREA OF OPERATION ?
2. HOW HIGH ARE THESE POWERLINES ?
3. HOW TALL ARE THE POLES OR TOWERS CARRYING POWERLINES ?

MOBILE OPERATION WITH WHIP ANTENNAS





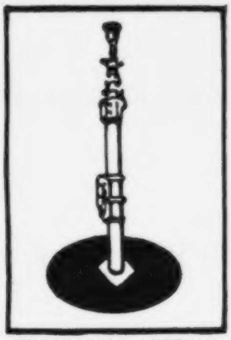


DO NOT STOP YOUR VEHICLE UNDER POWERLINES.

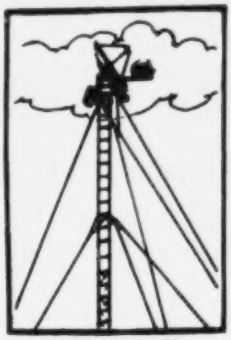
- IF POSSIBLE, TRY TO MAINTAIN MOBILE COMMUNICATIONS WITH YOUR ANTENNA(S) TIED DOWN.
- MAKE SURE AN ANTENNA TIP CAP IS SECURELY TAPED ON THE END OF EACH WHIP ANTENNA.
- DO NOT LEAN AGAINST OR TOUCH A WHIP ANTENNA WHILE THE TRANSMITTER IS ON.
- DURING CROSS-COUNTRY OPERATION, DO NOT ALLOW ANYONE TO STICK AN ARM, LEG OR WEAPON OVER THE SIDES OF THE VEHICLE. IF YOUR ANTENNA ACCIDENTALLY TOUCHES A POWERLINE AND A LEG, ARM OR WEAPON CONTACTS A DAMP BUSH OR THE GROUND, A SERIOUS OR FATAL ACCIDENT CAN HAPPEN.
- IF YOU ARE NOT SURE THAT AN ANTENNA ON YOUR VEHICLE WILL CLEAR A POWERLINE, STOP BEFORE YOU GET CLOSE TO THE POWERLINE AND EITHER CAREFULLY TIE DOWN THE ANTENNA OR REMOVE ANTENNA SECTIONS TO MAKE SURE THAT YOU CAN SAFELY DRIVE UNDER THE POWERLINE.

FIXED OPERATION WITH LONG RANGE ANTENNAS

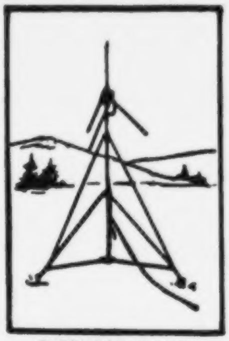
WARNING



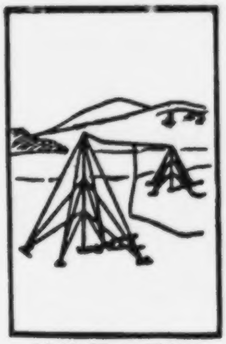
TELESCOPING ANTENNA MAST



TYPICAL TOWER



EXTENDED RANGE ANTENNA



DOUBLET ANTENNA

NEVER ERECT THESE LONG RANGE ANTENNAS DIRECTLY UNDER POWER LINES.

IF YOU MUST ERECT THESE LONG RANGE ANTENNAS NEAR POWERLINES, POWERLINE POLES OR TOWERS, OR BUILDINGS WITH OVERHEAD POWERLINE CONNECTIONS, NEVER PUT THE ANTENNA CLOSER THAN TWO TIMES THE ANTENNA HEIGHT FROM THE BASE OF THE POWERLINE, POLE, TOWER OR BUILDINGS.

NEVER ATTEMPT TO ERECT ANY LONG RANGE ANTENNA WITHOUT A FULL TEAM.

BEFORE ERECTING ANY LONG RANGE ANTENNA, INSPECT ALL THE PARTS MAKING UP THE ANTENNA KIT. DO NOT ERECT THE ANTENNA IF ANY PARTS ARE MISSING OR DAMAGED.

DO AS MUCH OF THE ASSEMBLY WORK AS POSSIBLE ON THE GROUND.

WHEN ERECTING THE ANTENNA, ALLOW ONLY TEAM PERSONNEL IN THE ERECTION AREA.

MAKE SURE THAT THE AREA FOR THE ANCHORS IS FIRM. IF THE GROUND IS MARSHY OR SANDY, GET SPECIFIC INSTRUCTIONS FROM YOUR CREW CHIEF OR SUPERVISOR ON HOW TO REINFORCE THE ANCHORS.

WHEN SELECTING LOCATIONS FOR ANCHORS, AVOID TRAVELED AREAS AND ROADS. IF YOU CANNOT AVOID THESE AREAS, GET SPECIFIC INSTRUCTIONS FROM YOUR SUPERVISOR AS TO WHAT CLEARANCE YOUR GUY WIRES AND ROPES MUST HAVE OVER THE TRAVELED AREAS AND ROAD.

CLEARLY MARK ALL GUY WIRES AND ROPES WITH THE WARNING FLAGS OR SIGNS SUPPLIED BY YOUR UNIT. IN AN EMERGENCY, USE STRIPS OF WHITE CLOTH AS WARNING STREAMERS.

IF YOU SUSPECT THAT POWERLINES HAVE MADE ACCIDENTAL CONTACT WITH YOUR ANTENNA, STOP OPERATING, ROPE OFF THE ANTENNA AREA, AND NOTIFY YOUR SUPERIORS.

IF THE WEATHER IN YOUR AREA CAN CAUSE ICE TO FORM ON YOUR LONG RANGE ANTENNA AND ITS GUY WIRES AND ROPES, ADD EXTRA GUYS TO SUPPORT THE SYSTEM. ROPE OFF THE AREA AND POST IT WITH WARNING SIGNS LIKE "BEWARE OF FALLING ICE."

DO NOT TRY TO ERECT ANY ANTENNA DURING AN ELECTRICAL STORM.

KEEP A SHARP EYE ON YOUR ANCHORS AND GUYS. CHECK THEM DAILY AND IMMEDIATELY BEFORE AND AFTER BAD WEATHER.

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL
2. IF POSSIBLE , TURN OFF THE ELECTRICAL POWER
3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL
4. SEND FOR HELP AS SOON AS POSSIBLE
5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

TECHNICAL MANUAL
No. 11-5820-562-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *31 January 1973*

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS

REPEATER SETS, RADIO AN/TRC-113(V)1, AN/TRC-113(V)2, AN/TRC-113(V)3, AN/TRC-113A(V)1, AN/TRC-113A(V)2, AND AN/TRC-113A(V)3

(NSN 5820-00-868-8211)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-ME-PS, Fort Monmouth, NJ 07703-5000.

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*This manual supersedes TM 11-5820-562-15, 22 May 1969, including all changes.

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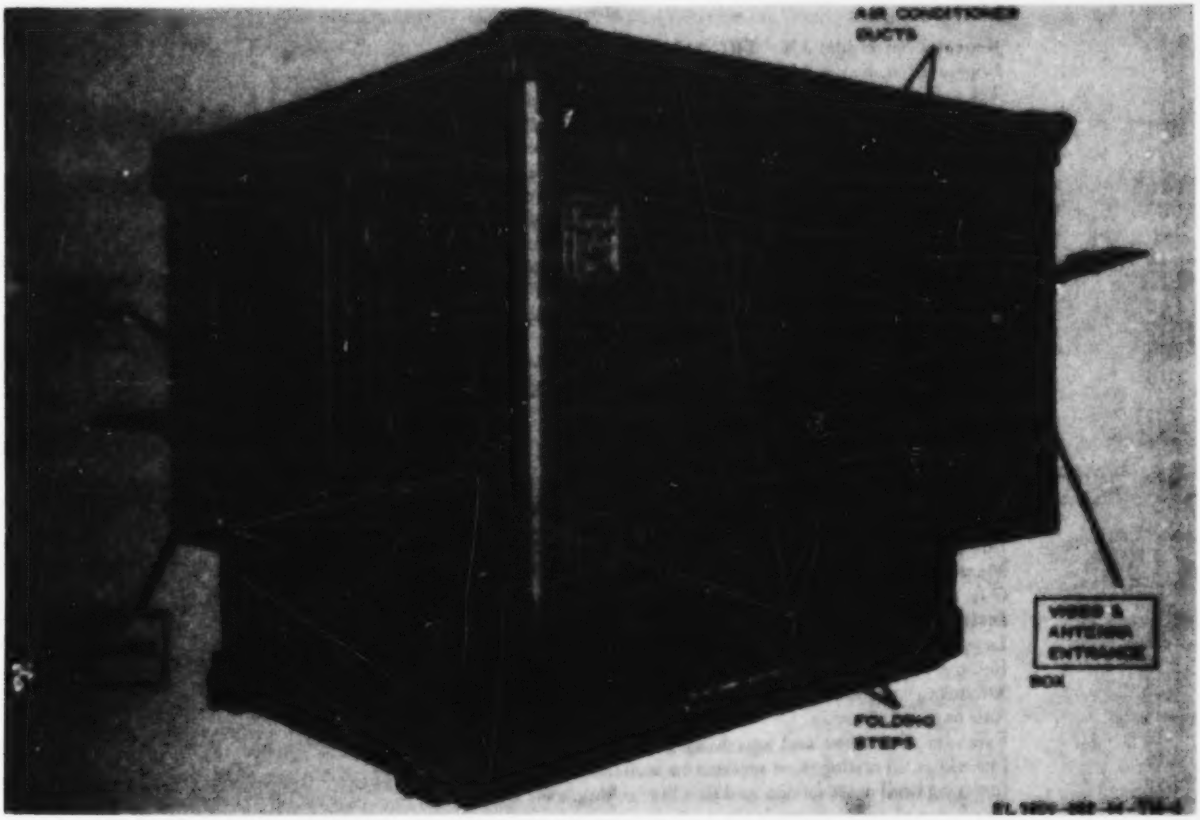
AIR CONDITIONER DUCTS
VIDEO & ANTENNA ENTRANCE BOX
FOLDING STEPS

Figure 1-1. Repeater Set, Radio AN/TRC-113, rear curbside view.

NOTE

Later model shelters will not have air conditioner ducts and facilities.

CHAPTER 1
INTRODUCTION

Section 1. GENERAL

1-1. Scope

a. This manual describes Radio Repeater Sets AN/TRC-113(V)1, AN/TRC-113(V)2, AN/TRC-113(V)3, AN/TRC-113A(V)1, AN/TRC-113A(V)2, and AN/TRC-113A(V)3 (fig. 1-1 and 1-2), and covers their installation, operation and maintenance.

b. Throughout this manual Repeater Set, Radio AN/TRC-113 represents Repeater Sets, Radio AN/TRC-113(V)1, AN/TRC-113(V)2, AN/TRC-113(V)3, AN/TRC-113A(V)1, AN/TRC-113A(V)2, or AN/TRC-113A(V)3.

c. Throughout this manual, where appropriate, references are made to other publications which cover the installation, operation, and maintenance of the equipments installed in the assemblage. A complete listing of applicable reference publications is provided in appendix A.

d. The maintenance allocation chart appears in appendix B, and the repair parts and special tools list in appendix C.

1-2. Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR-735-11-2/DLAR 4140.55/NAVMATINST 4355.73/AFR 400-54/MCO 4430.3E.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO 4610.19C/DLAR 4500.15.

1-3.1 Reporting Errors and Recommending Improvements

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1-3.2 Reporting Equipment Improvement Recommendations (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, NJ 07703. We'll send you a reply.

1-3.3. Administrative Storage

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraphs 5-1 and 5-2.

1-3.4 Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. Purpose. Repeater Set, Radio AN/TRC-113 is an air or vehicular transportable assemblage used to provide radio and cable repeater communication facilities for forward area pulse code modulation (pcm) communication systems.

b. Use. The use of the AN/TRC-113 is governed by the tactical situation and the requirements set down by the system planner. Although the AN/TRC-113 is primarily a radio or cable repeater, it may be used with other equipment such as, Terminal, Telephone AN/TRC-65 for radio terminal applications (fig. 1-3). Two of the equipment sets may be used for radio repeater applications (fig. 1-4) and cable repeater applications (fig. 1-5). Any one of the equipment sets may be used in a cable-to-radio conversion application (fig. 1-6).

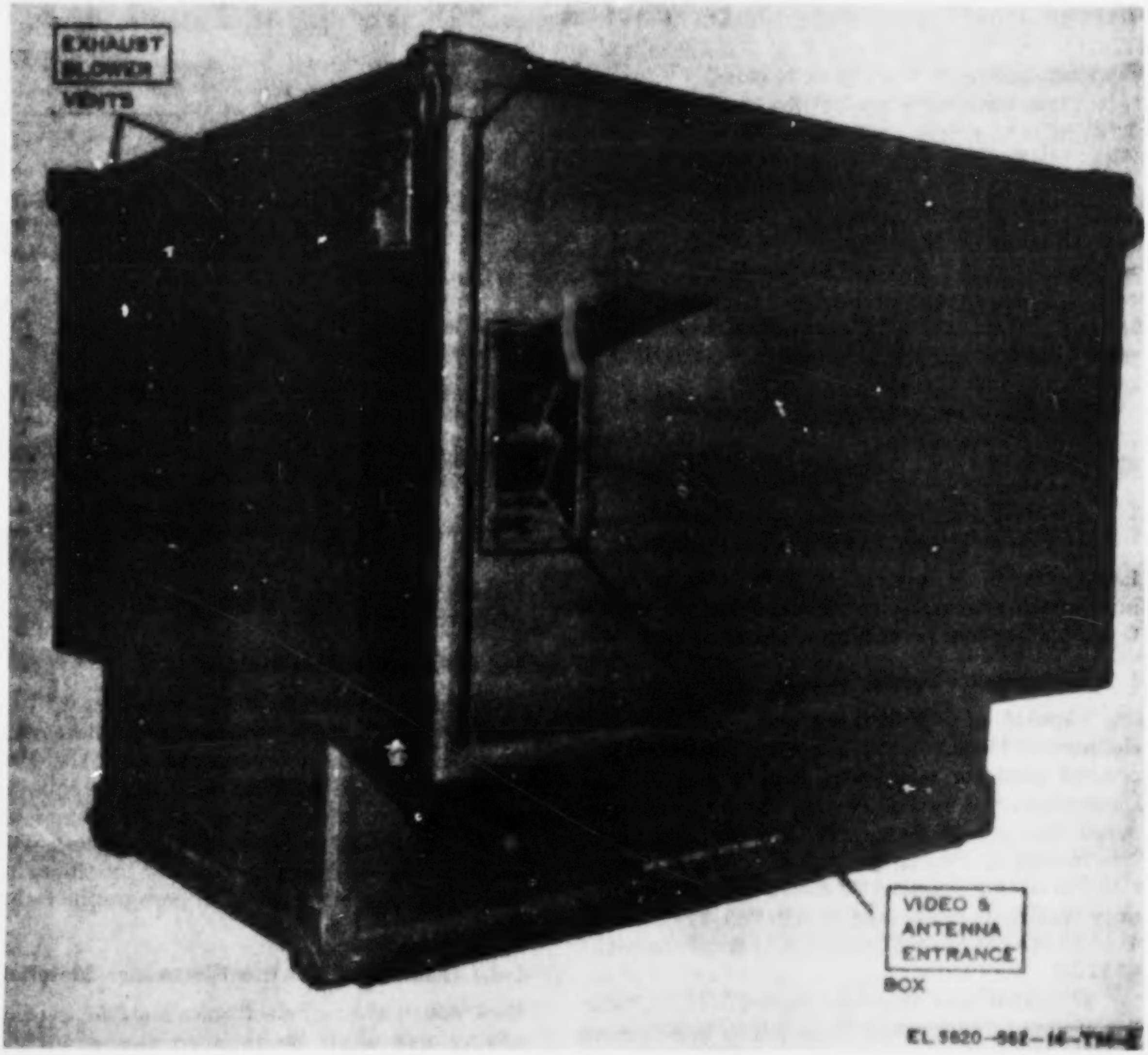
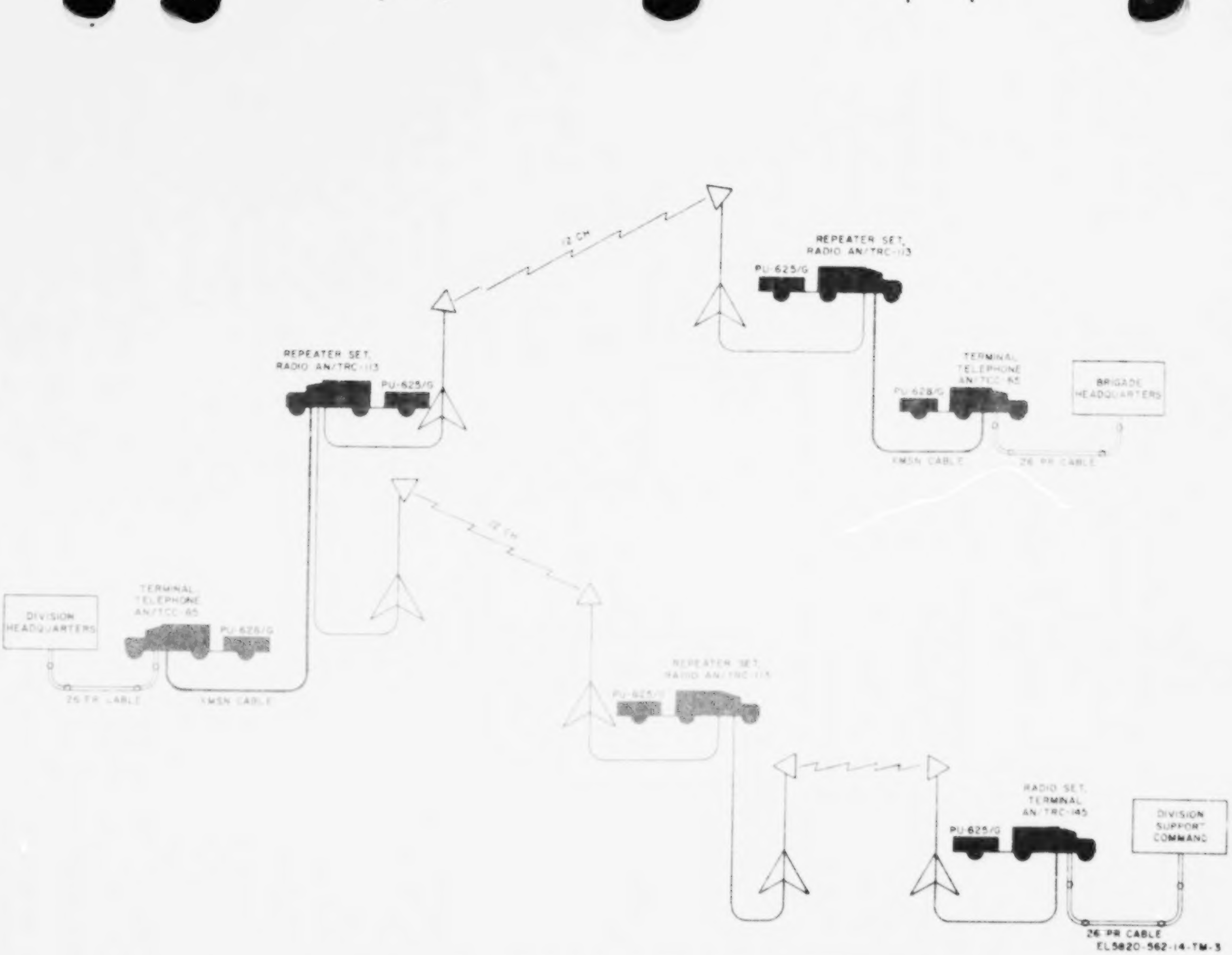

EXHAUST BLOWER VENTS
VIDEO & ANTENNA ENTRANCE BOX
EL 5820-562-14-TM-2

Figure 1-2. Repeater Set, Radio AN/TRC-113, front roadside view.


12 CH
REPEATER SET, RADIO AN/TRC-113
PU-625/G
REPEATER SET, RADIO AN/TRC-113
PU-625/G
TERMINAL TELEPHONE AN/TCC-65
PU-628/G
BRIGADE HEADQUARTERS
XMSN CABLE
26 PR CABLE
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DIVISION HEADQUARTERS
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PU-628/G
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XMSN CABLE
REPEATER SET, RADIO AN/TRC-113
PU-625/G
RADIO SET, TERMINAL AN/TRC-145
PU-625/G
DIVISION SUPPORT COMMAND
26 PR CABLE
EL5820-562-14-TM-3

Figure 1-3. Typical applications of AN/TRC-113.

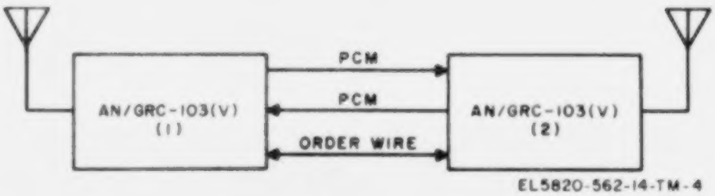

PCM
PCM
ORDER WIRE
AN/GRC-103(V) (1)
AN/GRC-103(V) (2)
EL5820-562-14-TM-4

Figure 1-4. 6/12-channel radio repeater application, block diagram.

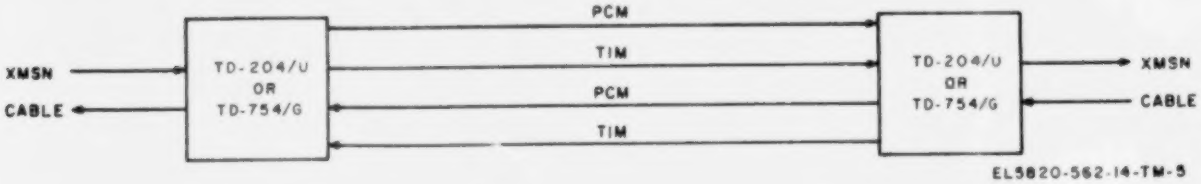

PCM
TIM
PCM
TIM
XMSN
CABLE
TD-204/U OR TD-754/G
TD-204/U OR TD-754/G
XMSN
CABLE
EL5820-562-14-TM-5

Figure 1-5. 12/24/48-channel cable repeater application, block diagram.

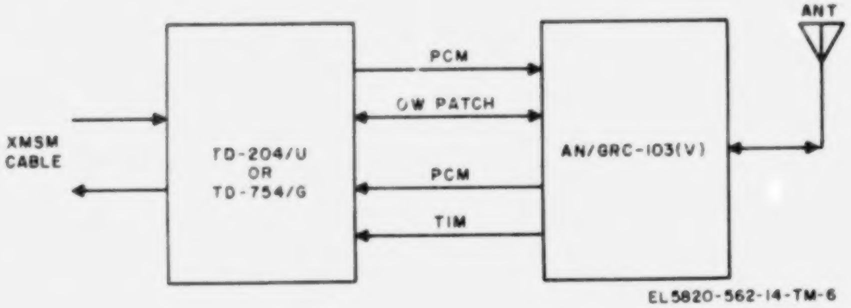

ANT
PCM
OW PATCH
PCM
TIM
XMSM CABLE
TD-204/U OR TD-754/G
AN/GRC-103(V)
EL5820-562-14-TM-6

Figure 1-6. 12-channel cable-to-radio conversion application, block diagram.

1-5. Technical Characteristics

a. Power Requirements.

Input voltage	115 volts, 50 to 60 Hertz, single phase.
Consumption:	
Incandescent lights (4)	100 watts.
Power distribution panel	4 watts.
Exhaust blowers (2)	440 watts.
Fluorescent lights (5)	100 watts.
Electric heaters (2)	3,000 watts (only one in use when equipment is used).
AN/GRC-103 (V) (3)	1,110 watts.
TD-204/U (3)	186 watts.
TD-754/U(3)	105 watts.
LS-147C/FI	40 watts.

b. Radio Characteristics.

NOTE

The operating frequency of the radio equipment is determined by the receiver and transmitter radio frequency (rf) heads and antenna elements supplied with the assemblage (band I, II, or III). The Rf heads and antenna elements are normally shipped with the assemblage in accordance with operating frequency assignments for specific localities. The Rf heads and antenna elements may be requisitioned and turned in through normal supply channels consistent with required frequency assignments.

Modulation	Frequency modulation (fm).
Operating bands:	
Band I:	
Frequency range	220.0 to 404.5 MHz.
Channels	40 through 409.
Band II.	
Frequency range	394.5 to 705.0 MHz.
Channels	389 through 1,010.
Band III:	
Frequency range	695.0 to 1,000 MHz.
Channels	990 through 1,600.

Channel separation	0.5 MHz.
Transmitting power:	
Band I	25 watts minimum.
Band II	15 watts minimum.
Band III	15 watts minimum.
Receiver sensitivity	—94 dbm.

Minimum transmitter-to-receiver frequency separation required. 16.5 MHz (33 channels).

Maximum receiver input	—10 dbm.
Receiver noise figure	9 db nominal (11 db maximum).
Pcm pulse rate and interval:	
6-channel	288 kHz. 3.472 sec.
12-channel	576 kHz. 1.736 sec.
Order wire:	
Output impedance	600 ohms unbalanced.
Output level	—10 dbm (2 outputs).
Input impedance	600 ohms unbalanced.
Input Level	—10 dbm (2 inputs).
Handset receive level	—18 dbm.
Sidetone level	—24 dbm.
Ringing frequency	1,600 ± 8 Hertz.
Ringing level	—10 dbm ± 1.

c. Antenna Characteristics.

Impedance	50 ohms unbalanced.
Voltage standing wave ratio:	
Band I	1.75 maximum.
Band II	1.5 maximum.
Band III	1.75 maximum.
Gain:	
Band I:	
220 MHz	6.5 db.
400 MHz	8.0 db.
Band II:	
400 MHz	8.0 db.
700 MHz	8.5 db.
Band III:	
700 MHz	8.5 db.
1,000 MHz	9.5 db.

d. Pcm Cable Characteristics.

Pulse type	Binary dipulse.
Pulse amplitude:	
To cable	2 volts peak.
From cable	30 mv nominal.
Input and output impedance	62 ohms.
Pulse rate and interval:	
6-channel	288 kHz; 3.472 μsec.
12-channel	576 kHz; 1.736 μsec.
24-channel	1,152 kHz; 868 nsec.
48-channel	2,304 kHz; 434 nsec.
Cable type	CX-4245/G or CX-11230/G.
Order wire:	
Facility	Baseband channel independent of pcm traffic.
Frequency response	300 to 1,700 Hertz.
Signaling frequency	1,600 Hertz.
Transmit level	9 volts rms minimum at 880 ohms.
Receive level	Adjustable 150 mv to 16 volts rms across 880 ohms.

e. Local Communications Facilities.

Intercom	LS-147C/FI.
Telephone Set	TA-312/PT.

f. Mechanical Characteristics.

Dimensions:	
Length	85 inches.
Width	79 inches.
Height	70 inches.
Volume	272 cu ft.
Gross weight	1,275 lb.
Load per skid	2.42 lb per sq in.

1-6. Table of Components

FSN	Item	Quantity (ea)	Dimensions (in.) Height	Dimensions (in.) Width	Dimensions (in.) Depth	Weight (lb)
5820-868-8211	Radio Repeater Set AN/TRC-113 consisting of:	1	70	79	85	1275
5410-130-5804	Shelter, Electrical Equipment S-335/TRC-113 including:	1	70	79	85	1275
5895-089-8990	Dummy Load, Electrical DA-437/GRC-103(V).	2				
5805-900-8200	Multiplexer TD-204/U or	3	8½	17	20	56
5820-930-8078	Multiplexer TD-754/G	3	8½	17¼	12	45
5820-935-4931	Radio Set AN/GRC-103(V) consisting of:	3				
5820-824-0830	Transmitter, Radio T-983(P)/GRC-103(V) with either:	1	8½	17⅝	12	42.5
5820-824-0832	Amplifier-Frequency Multiplier AM-4320/GRC-103(V) (Band I),	1	8½	8½	11¾	20.8
5820-011-8546	Amplifier-Frequency Multiplier AM-421/GRC-103(V), (Band II), or	1	8½	8½	11¾	21
5820-011-8535	Amplifier-Frequency Multiplier AM-4322/GRC-103(V) (Band III).	1	8½	8½	11¾	21.5
5820-824-0831	Receiver, Radio R-1329(P)/GRC-103(V) with either:	1	8½	17⅜	12	36

FSN	Item	Quantity (ea)	Dimensions (in.)			Weight (lb)
			Height	Width	Depth	
5820-824-0833	Amplifier-Converter AM-4316/GRC-103(V) (Band I).	1	8½	10¼	11¾	28
5820-011-8702	Amplifier-Converter AM-4317/GRC-103(V) (Band II), or	1	8½	10¼	11¾	29
5820-011-8582	Amplifier-Converter AM-4318/GRC-103(V) (Band III).	1	8½	10¼	11¾	27.5
5805-878-3539	Receiver-Transmitter, Order Wire RT-773/GRC-103(V).	1	3¼	8¾	12	7.6
	Antenna Assembly consisting of:	2				
5895-089-8989	Either Antenna AS-1852/GRC-103(V) (Band I) including:	1				
5985-089-8995	Reflector, Antenna AS-2150/GRC-103(V).	1	38½	37⅜	7¾	24.75
	Antenna Element AS-2151/GRC-103(V).	1	24⅛	24⅝	3⅛	5
	Antenna AS-1853/GRC-103(V) (Band II) including:	1				
5985-089-8995	Reflector, Antenna AS-2150/GRC-103(V).	1	38½	37⅜	7¾	24.75
	Antenna Element AS-2194/GRC-103(V) or	1	18⅛	11	3½	2.5
	Antenna AS-1854/GRC-103(V) (Band III) including:	1				
5985-089-8995	Reflector, Antenna AS-2150/GRC-103(V).	1	38½	37⅜	7¾	24.75
	Antenna Element AS-2195/GRC-103(V).	1	11	8	1⅝	1.2
5985-089-8993	Mast AB-952/GRC-103(V) including:					
5985-089-8992	Elevator, Antenna AB-1072/GRC-103(V).	1	63	16¾	15¼	48
5985-089-8994	Mast Section AB-1071/GRC-103(V)	7	62	4 dia	....	8
5985-089-8988	Accessory Kit, Mast MK-1069/GRC-103(V).	1	37	21	6	57.5
5965-669-6871	Headset-Microphone H-91/U (TD-204/7)	1				
5965-892-3850	Headset H-156/U (TD-743/G)	1				
5830-752-5357	Intercommunication Station LS-147C/FI.	1	6⅝	11⅛	7	10.63
6115-873-3915	Generator Set, Gasoline Engine, Trailer Mounted PU-625/G (used with, not part of).	1				
5805-543-0012	Telephone Set TA-312/PT.	1	6⅝	4	10½	8.38
5410-752-2435	Cable Assembly, Power Electrical CX-7453A/U and Reel RC-435/U.	1	....	....	100 ft	
5995-935-2686	Cable Assembly, Power Electrical CX-7705A/U.	1	....	....	15 ft	
	Cable assembly, telephone, SC-D-627081Grl; 80063.	1	....	....	84	
	Cable assembly, telephone, SC-D-627081Gr2; 80063.	1	....	....	84	
	Cable assembly, telephone, SC-D-627081Gr3; 80063.	1	....	....	84	
	Cable assembly, telephone, SC-D-627081Gr4; 80063.	1	....	....	84	
	Cable assembly, telephone, SC-D-627081Gr5; 80063.	1	....	....	84	
	Cable assembly, telephone, SC-D-627081Gr6; 80063.	1	....	....	84	
	Cable assembly, telephone, SC-D627081Gr7; 80063.	6	....	....	12	
	Cable assembly, telephone, SC-D-627083Grl; 80063.	1				
	Cable assembly, telephone, SC-D-627091Grl; 80063.	1	....	....	60	

FSN	Item	Quantity (ea)	Dimensions (in.)			Weight (lb)
			Height	Width	Depth	
	Cable assembly, telephone, SC-D-627091Gr2; 80063.	1			48	
	Cable assembly, telephone, SC-D-627091Gr3; 80063.	1			60	
	Cable assembly, telephone, SC-D-627093Gr1; 80063.	1			102	
	Cable assembly, telephone, SC-D-627093Gr2; 80063.	1			78	
	Cable assembly, telephone, SC-D-627093Gr3; 80063.	1			102	
	Cable assembly, power electrical, SC-D-627094Gr1; 80063.	3			42	
	Cable assembly, power electrical, SC-D-627094Gr2; 80063.	3			30	
	Cable assembly, power electrical, SC-D-627094Gr3; 80063.	3			30	
	Cable assembly, telephone, SC-C-627148Gr1; 80063.	3			12	
	Cable assembly, telephone, SC-D-626835Gr12.	7			12	
	Cable assembly, telephone, SC-D-626835Gr25; 80063.	1			42	
	Cable assembly, telephone, SC-D-626835Gr31; 80063.	1			42	
	Cable assembly, telephone, SC-C-626835Gr37; 80063.	1			54	
	Cable assembly, telephone, SC-D-626835Gr24; 80063.	1			60	
	Cable assembly, telephone, SC-D-626835Gr26; 80063.	1			60	
	Cable assembly, telephone, SC-D-626835Gr28; 80063.	1			60	
	Cable assembly, telephone, SC-D-626835Gr30; 80063.	1			60	
	Cable assembly, telephone, SC-D-626835Gr32; 80063.	1			60	
	Cable assembly, telephone, SC-D-626835Gr34; 80063.	1			66	
	Cable assembly, telephone, SC-D-626835Gr40; 80063.	1			66	
	Cable assembly, telephone, SC-D-636835Gr43; 80063.	1			66	
	Cable assembly, telephone, SC-D-626835Gr36; 80063.	1			72	
	Cable assembly, telephone, SC-D-626835Gr38; 80063.	1			72	
	Cable assembly, telephone, SC-D-636835Gr27; 80063.	1			84	
	Cable assembly, telephone, SC-D-626835Gr29; 80063.	1			84	
	Cable assembly, telephone, SC-D-626835Gr33; 80063.	1			84	
	Cable assembly, telephone, SC-D-626835Gr35; 80063.	1			84	
	Cable assembly, telephone, SC-D-626835Gr39; 80063.	1			84	
	Cable assembly, telephone, SC-D-626835Gr41; 80063.	1			84	
	Cable assembly, telephone, SC-D-626835Gr42; 80063.	1			84	
	Cable assembly, telephone, SC-D-626835Gr44; 80063.	1			84	
5995-144-0282	Cable, Special Purpose CX-10879/U.	6				
9920-682-6757	Ashtray, AA-A-7101 type II, style A; 81349.	1				

FSN	Item	Quantity (ea)	Dimensions (in.)			Weight (lb)
			Height	Width	Depth	
5110-293-2339	Axe, single bit, SC-C-539451, 80063	1				
7520-926-4726	Basket, waste paper, SC-D-539454; 80063	1				
6135-120-1020	Battery, Dry BA-30	2				
7920-178-8815	Brush, dusting, bench, SC-C-53946; 80063	1				
7105-943-3868	Chair, folding, SC-D-539471; 80063	1				
7910-832-7222	Cleaner, vacuum, 3800, 39335	1				
6645-800-7094	Clock, aircraft, mechanical, SC-C-539475; 80063	1				
6605-264-3994	Compass, magnetic 800090; 33363	1				
6625-179-5217	Converter, Frequency, Electronic CV-2500/GRC.	1				
7210-753-3043	Cushion, chair, SC-C-539626; 80063	1				
4210-223-9912	Extinguisher, fire, SC-C-539482; 80063	1				
5120-293-2696	Extractor, electron tube, f/7 pm tube, SC-B-539647; 80063.	1				
5120-293-2692	Extractor, electron tube, f/9 pm tube, SC-B-539648; 80063.	1				
5120-946-5148	Grip, cable, jaw, signal, SC-B-539692; 80063	2				
5120-946-5114	Grip, cable, jaw, power, SC-B-539693; 80063	1				
5140-752-2525	Ground strap, SC-B-539492	2	....	....	12	
5120-251-4489	Hammer, hand, SC-C-539606; 80063	1				
5420-912-3502	Heater, space, electrical SC-D-539901; 80063	2				
6545-922-1200	First aid kit, general purpose, SC-D-539483; 80063.	1				
2540-846-8483	Ladder, Vehicle Boarding MX-3543/G	1				
6240-00-299-7250	Lamp, fluorescent, SC-C-539495; 80063	5				
6240-635-9753	Lamp glow, NE-34; 81349	1				
6240-223-9100	Lamp, glow, NE-51; 81349	9				
6240-274-4027	Lamp, incandescent, 25T8DG; 24455	4				
6240-143-3070	Lamp, incandescent, 50W/RS; 24455	1				
6230-729-9614	Lantern, electrical, SC-C-539391; 80063	1				
5410-752-2525	Lead, electrical, SC-B-539492; 80063	1				
6230-239-3518	Light, extension, SC-C-539496; 80063	1				
	Mat, floor, SC-C-539600-2	1				
5120-293-3603	Pin, straightener, electron tube, SC-B-539472; 80063.	1				
	Power Supply PP-6917/GR (for CV-2500/GRC).	1				
5975-224-5975	Rod, Ground MX-148/G	2				
	Screwdriver, Phillips, GGG-S-121, type VI, C1.1, style 1, point size 2.	1				
5120-038-4178	Screwdriver, SC-C-539602-4; 80063	1				
7520-162-6178	Sharpener, pencil, SC-C-539603; 80063	1				
	Tape measuring, 100 ft; GGC-T-1066, type II, class B, style 2, case V.	1				
	Tiedown adapter assembly, S-250; SC-C-5399958.	4				
5120-224-2596	Wrench, socket	1				
	Running spares, consisting of:					
6240-229-5876	Lamp, glow, NE-34	1				
6240-00-299-7250	Lamp, fluorescent, SC-C-539495; 80063	2				
6240-223-9100	Lamp, glow, NE-51, 81349	2				
6240-143-3070	Lamp, incandescent, 50W/RS, 24455	1				
6250-299-2884	Starter, fluorescent, SC-B-539604; 80063	5				
5960-00-242-5916	Tube, electron type 7211 (AN/GRC-108)	1				
	Filter, air conditioning (AN/GRC-108)	1				
6240-155-7836	Lamp, incandescent (AN/GRC-108)	12				
5805-944-8142	Panel 6A2, order wire I (TD-204/U)	1				
5805-944-8932	Panel 6A3, order wire II (TD-204/U)	1				
5805-926-0264	Panel 6A4, cable input (TD-204/U)	1				
5805-944-8159	Panel 6A5, transmit I (TD-204/U)	1				
5805-944-8153	Panel 6A6, transmit II (TD-204/U)	1				

FSN	Item	Quantity	Dimensions (in)			Weight (lb)
			Height	Width	Depth	
5805-911-8101	Panel 6A7, receive section (TD-204)	1				
	Panel 12A2, order wire (TD-754 / G)	1				
	Panel 12A3, order wire and alarms (TD-754 / G)	1				
	Panel 12A4, transmit circuit (TD-754 / G)	1				
	Panel 12A5, cable input circuit (T-754 / G)	1				
	Panel 12A6, receive circuit (TD-754 / G)	1				
5805-929-3585	Panel, fuse and lamp (TD-204 / U)	1				
	Panel, extender (TD-204 / U)	1				
	Panel, extender (TD-754 / G)	1				

1-7. Description

(figs. 1-1, 1-2, 1-7 through 1-15, and FO-2) The power cable and the AN / GRC-103(V) antenna components are stowed on the PU-625( ) / G trailer (fig. 1-7). All operating components of the AN / TRC-113 are housed in Shelter, Electrical Equipment S-335 / TRC-113. The S-335 / TRC-113 is fully insulated and weatherproofed and can be transported by air or ground vehicle. Equipment racks are secured to the walls and floor of the S-335 / TRC-113. Power and signal wiring are housed in ducts. Storage areas and mounting fixtures are provided for spares and accessory items. Exhaust blowers are wall mounted on the front wall of the S-335 / TRC-113. A peepsight and an air filter are provided on the door.

a. Lighting. Five fluorescent light fixtures are mounted on the ceiling of the assemblage (fig. FO-2) to provide primary lighting. Four incandescent lights provide lighting when the temperature is too low for the fluorescent lights to operate. The lighting may be controlled by a door interlock for blackout operations. The interlock may be bypassed if blackout conditions are not required.

b. Power Connections. Watertight receptacles are provided in the power entrance box on the roadside rear wall of the assemblage (fig. 1-1) for connection to an external power source. The ac power is routed through the power distribution panel and the wall ducts to the ac receptacles and the ceiling lights. Ac power may be supplied by an engine generator set, such as the PU-625( ) / G, or from a central power source.

c. Signal Connections. Pcm cable connections are made to the AN / TRC-113 through receptacles in the video and antenna entrance boxes on the curbside wall (fig. 1-1) and the roadside wall (fig. 1-2) of the assemblage. The power entrance box on the rear roadside wall of the assemblage contains binding posts for connecting a local telephone facility (TA-312 / PT) and the intercommunications (intercom) lines.

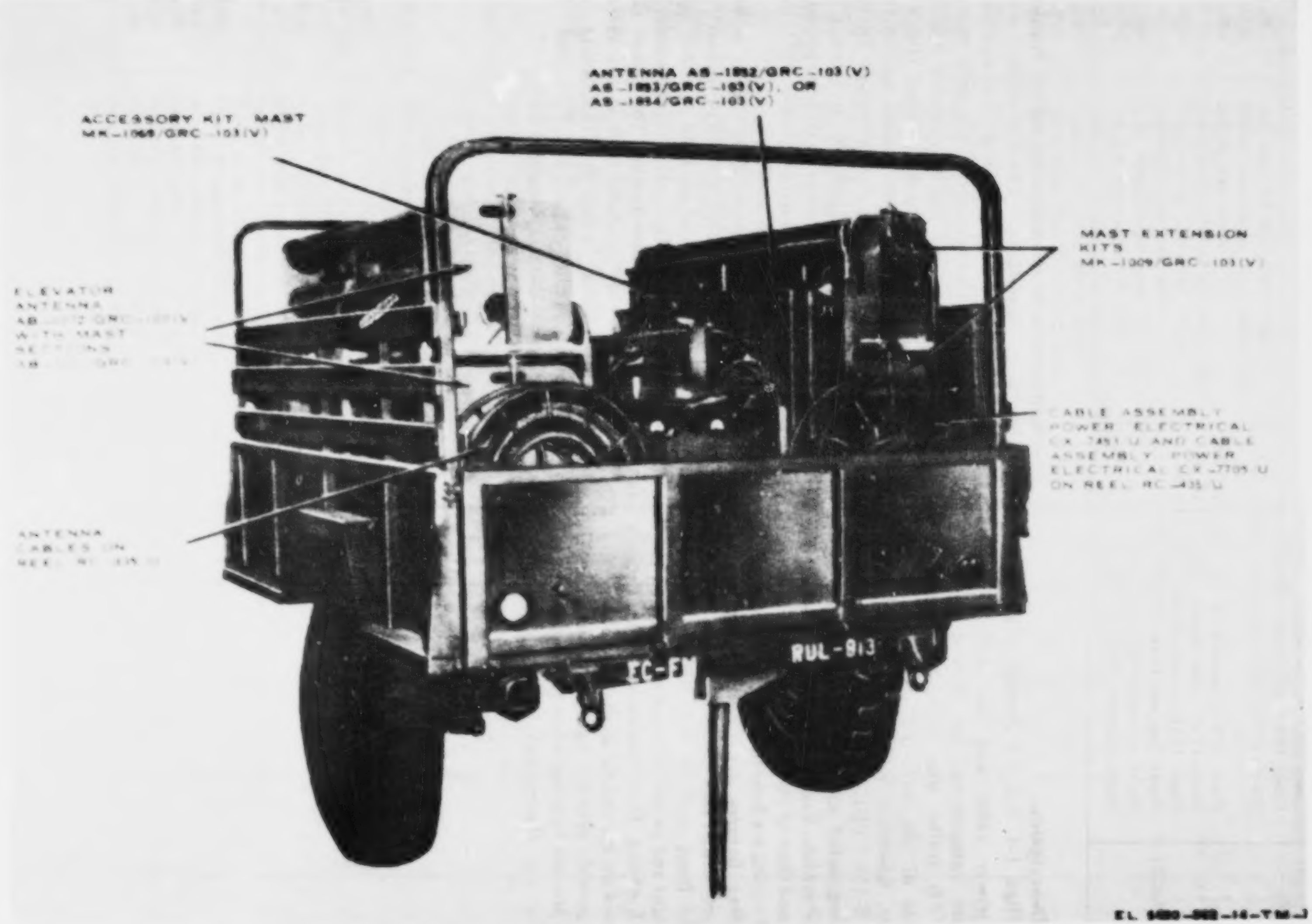

ANTENNA AS-1852/GRC-103(V)
AS-1853/GRC-103(V), OR
AS-1854/GRC-103(V)
ACCESSORY KIT, MAST
MK-1068/GRC-103(V)
MAST EXTENSION
KITS
MK-1009/GRC-103(V)
ELEVATOR
ANTENNA
AB-[illegible]/GRC-103(V)
WITH MAST
SECTIONS
AB-[illegible]/GRC-103(V)
CABLE ASSEMBLY,
POWER, ELECTRICAL
CX-7451/U AND CABLE
ASSEMBLY, POWER
ELECTRICAL CX-7705/U
ON REEL RC-435/U
ANTENNA
CABLES ON
REEL RC-[illegible]
RUL-913
EC-F
EL 5820-562-14-TM-J

Figure 1-7. Gasoline Engine Generator PU-625( )/G, rear roadside view.

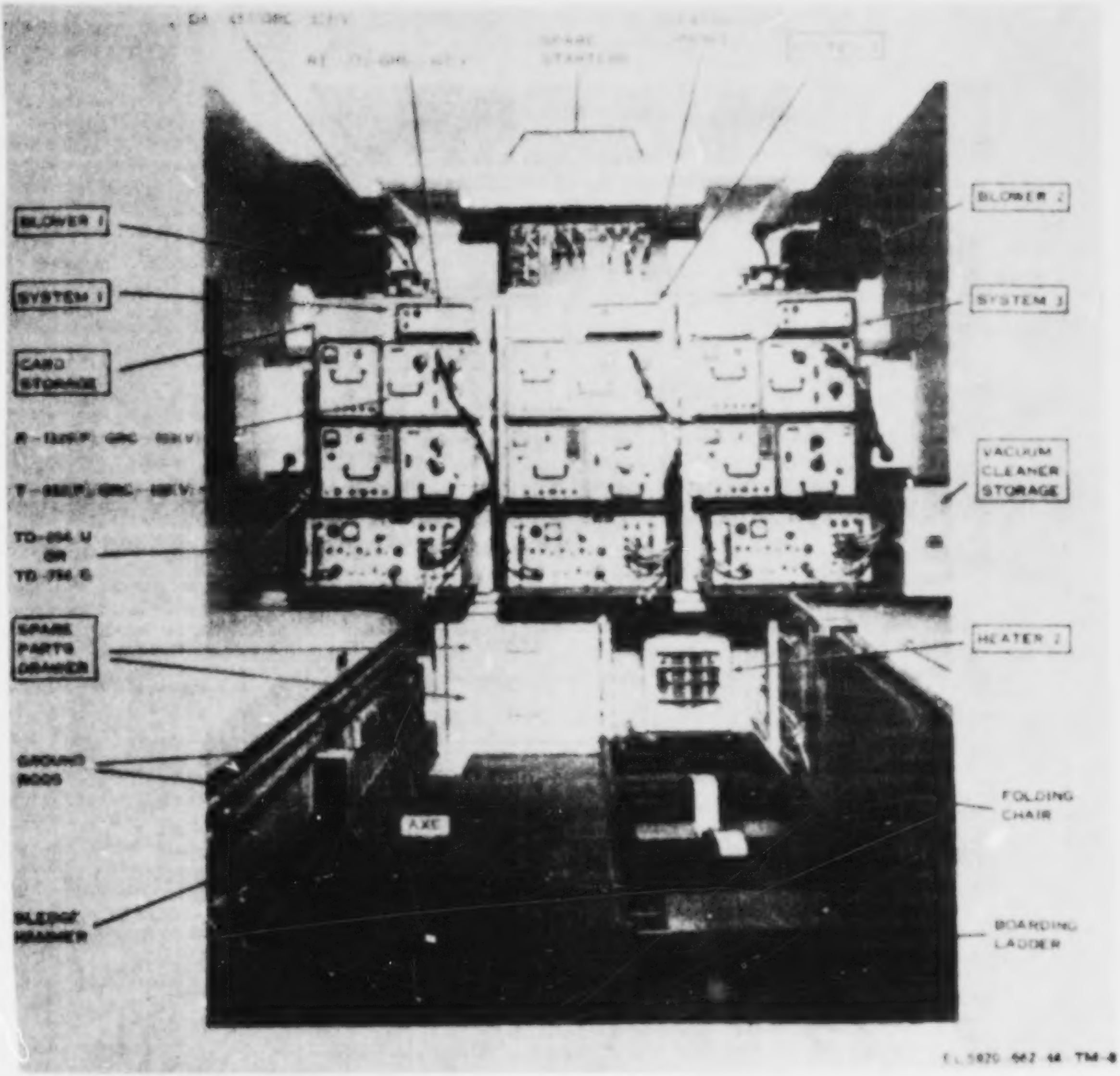

SPARE STARTERS
SYSTEM 2
BLOWER 1
SYSTEM 1
CARD STORAGE
R-1329(P)/GRC-103(V)
T-983(P)/GRC-103(V)
TD-204/U OR TD-754/G
SPARE PARTS DRAWER
GROUND RODS
AXE
SLEDGE HAMMER
BLOWER 2
SYSTEM 3
VACUUM CLEANER STORAGE
HEATER 2
FOLDING CHAIR
BOARDING LADDER
EL5820-562-14-TM-8

Figure 1-8. Repeater Set, Radio AN/TRC-113, interior front view.

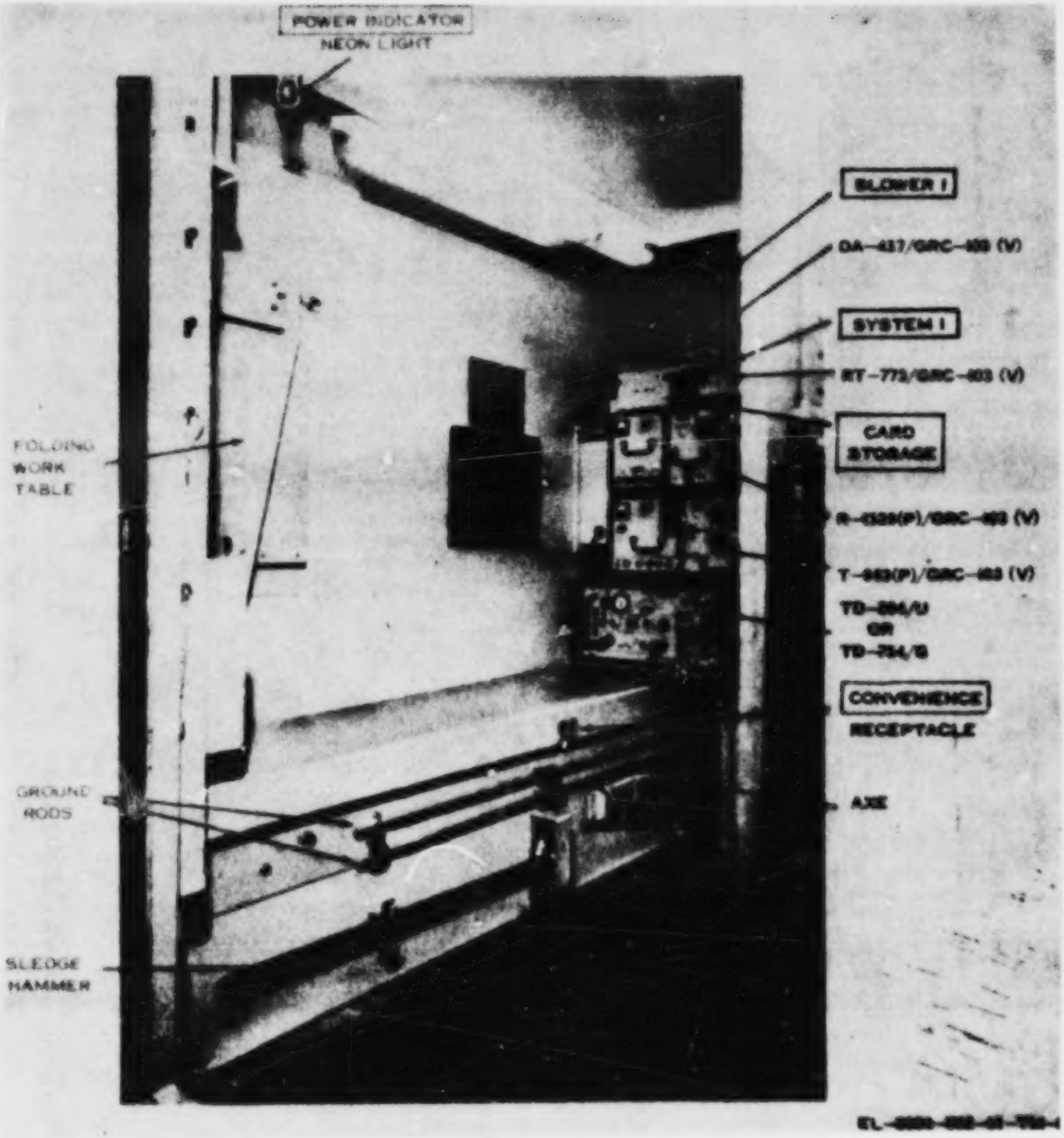
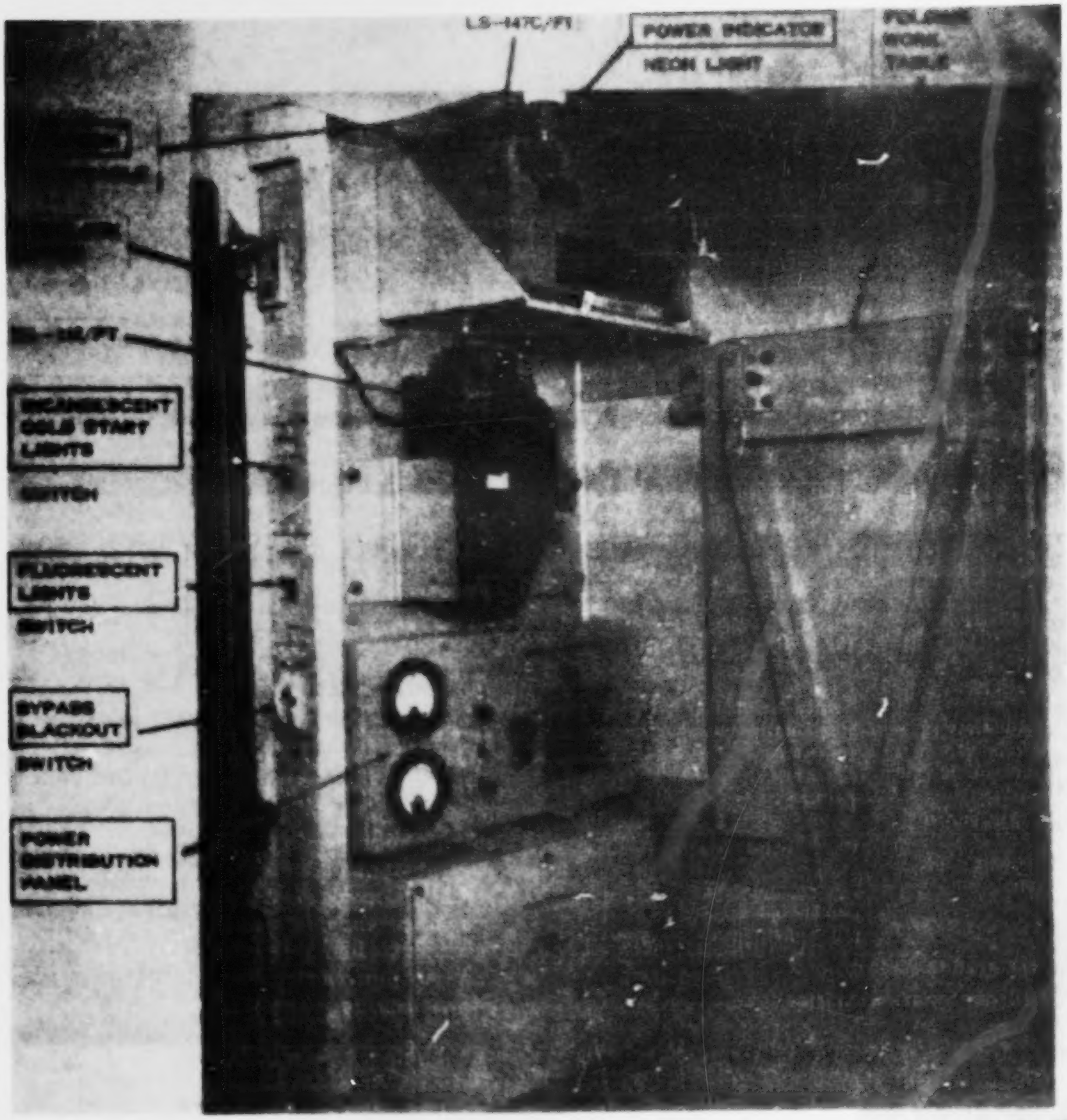

POWER INDICATOR
NEON LIGHT
BLOWER I
DA-437/GRC-103 (V)
SYSTEM I
RT-773/GRC-103 (V)
CARD
STORAGE
FOLDING
WORK
TABLE
R-1329(P)/GRC-103 (V)
T-983(P)/GRC-103 (V)
TD-204/U
OR
TD-754/G
CONVENIENCE
RECEPTACLE
GROUND
RODS
AXE
SLEDGE
HAMMER
EL-5820-562-14-TM-

Figure 1-9. Repeater Set, Radio AN/TRC-113, interior front roadside view.


LS-447C/FT
POWER INDICATOR
NEON LIGHT
FOLDING WORK TABLE
SB-[illegible]/FT
INCANDESCENT COLD START LIGHTS
SWITCH
FLUORESCENT LIGHTS
SWITCH
BYPASS BLACKOUT
SWITCH
POWER DISTRIBUTION PANEL

EL 5820-562-14-TM-[illegible]

Figure 1-10. Repeater Set, Radio AN/TRC-113 interior rear roadside view

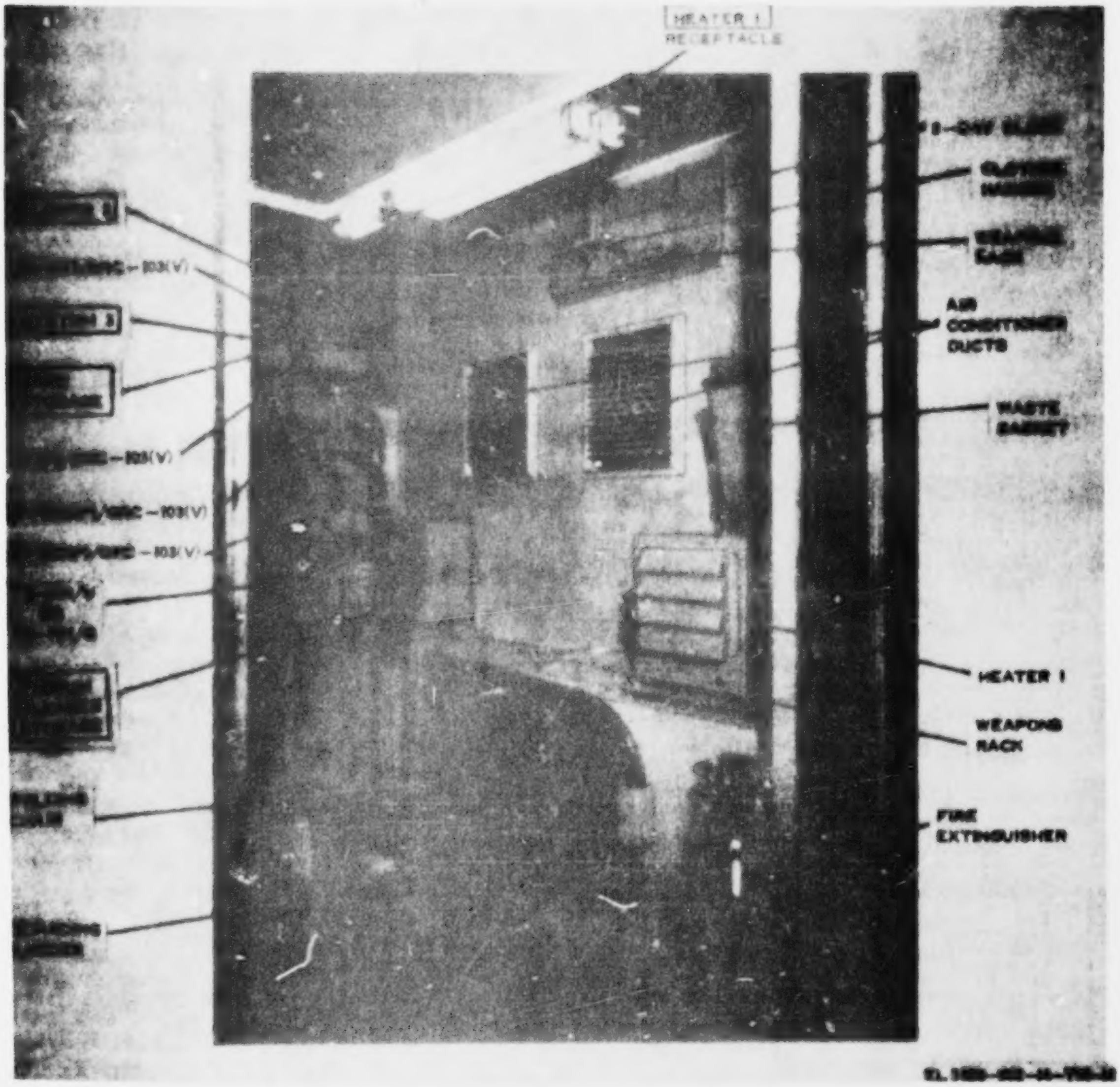

HEATER 1 RECEPTACLE
AIR CONDITIONER DUCTS
WASTE BASKET
HEATER 1
WEAPONS RACK
FIRE EXTINGUISHER
–103(V)
–103(V)
–103(V)
–103(V)

Figure 1-11. Repeater Set, Radio AN/TRC-113, interior front curbside view.

NOTE

Later model shelters will not have air conditioner ducts and facilities.

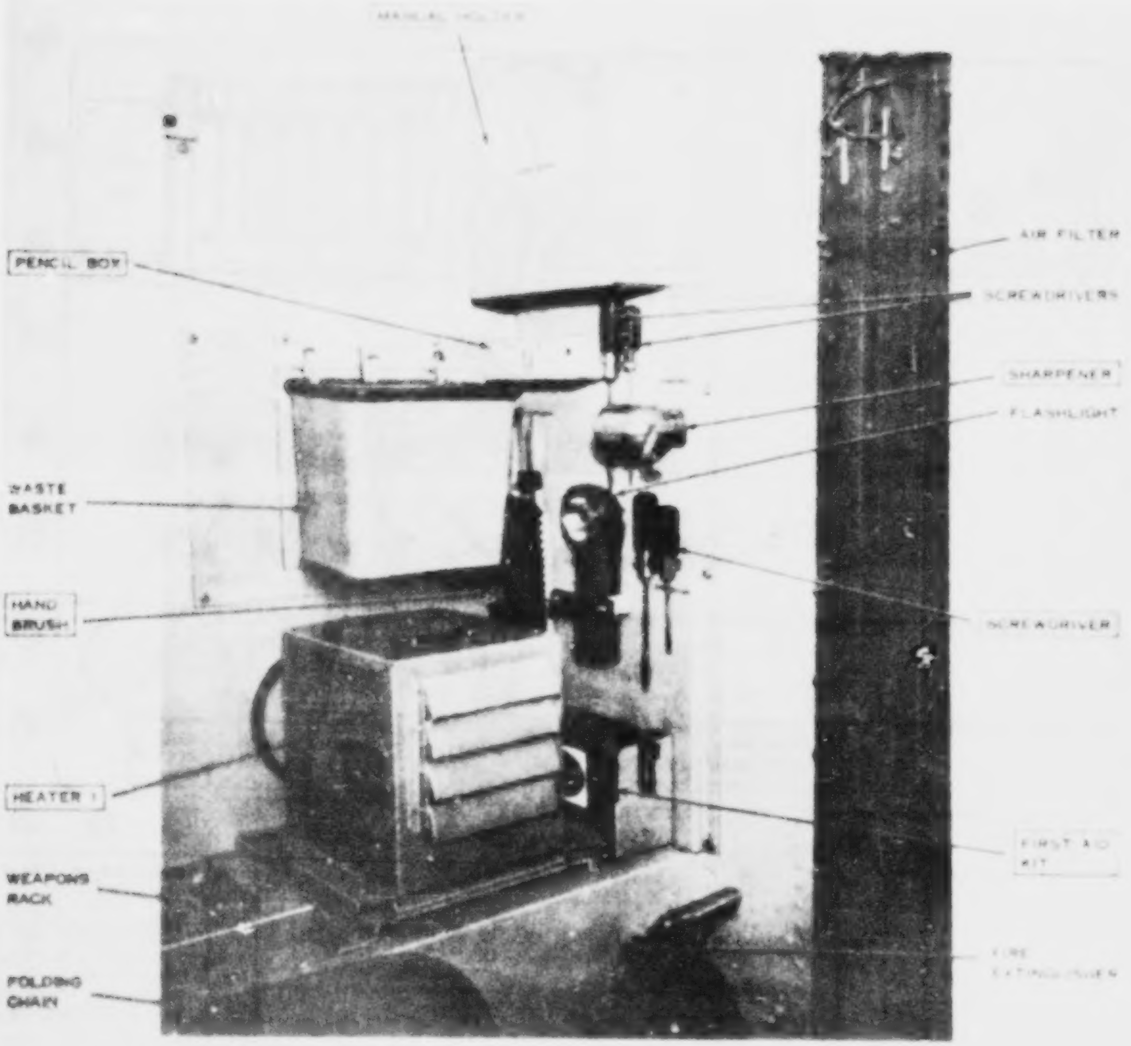
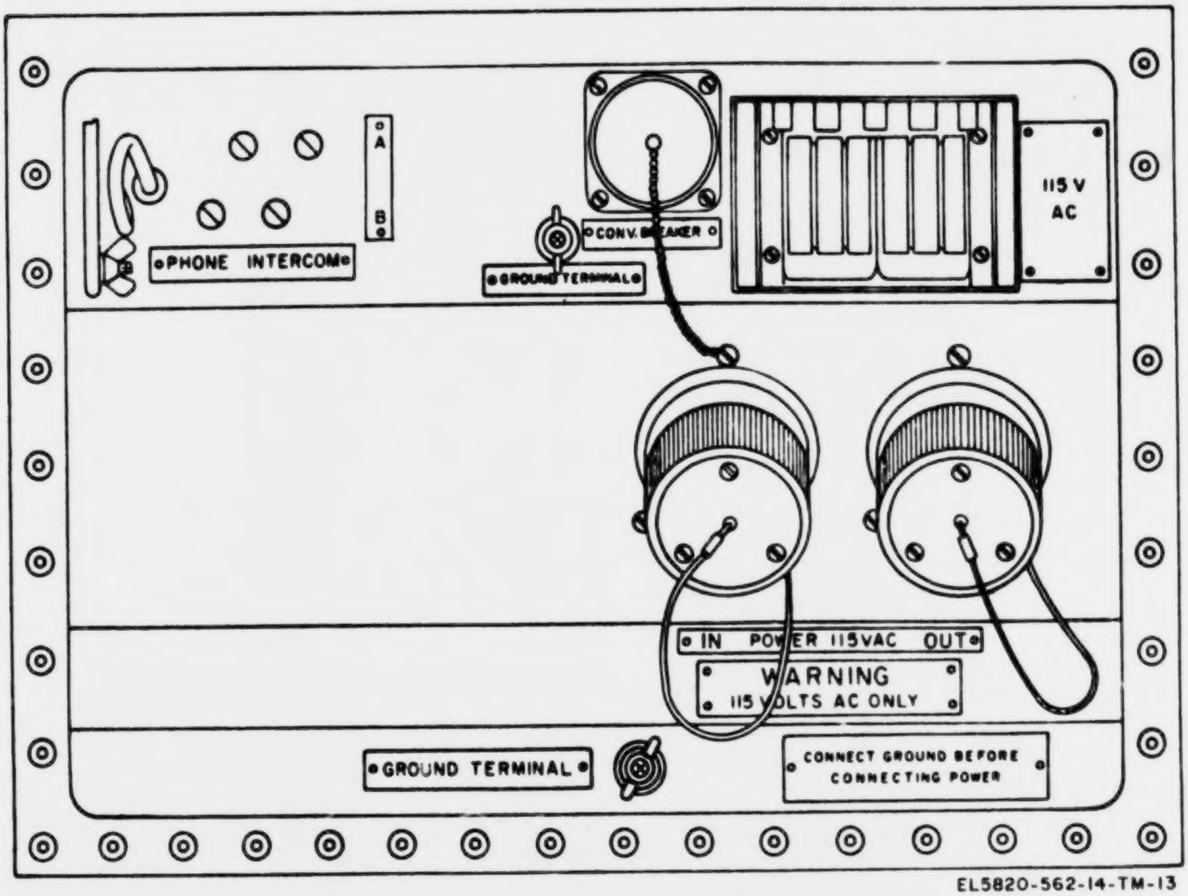

MANUAL HOLDER
PENCIL BOX
AIR FILTER
SCREWDRIVERS
SHARPENER
FLASHLIGHT
WASTE BASKET
HAND BRUSH
SCREWDRIVER
HEATER 1
FIRST AID KIT
WEAPONS RACK
FIRE EXTINGUISHER
FOLDING CHAIR

Figure 1-12. Repeater Set, Radio AN/TRC-113, interior rear curbside view.


PHONE INTERCOM
A
B
CONV. BREAKER
GROUND TERMINAL
115 V
AC
IN POWER 115VAC OUT
WARNING
115 VOLTS AC ONLY
GROUND TERMINAL
CONNECT GROUND BEFORE
CONNECTING POWER

EL5820-562-14-TM-13

Figure 1-13. Power entrance box, exterior view, less cover.

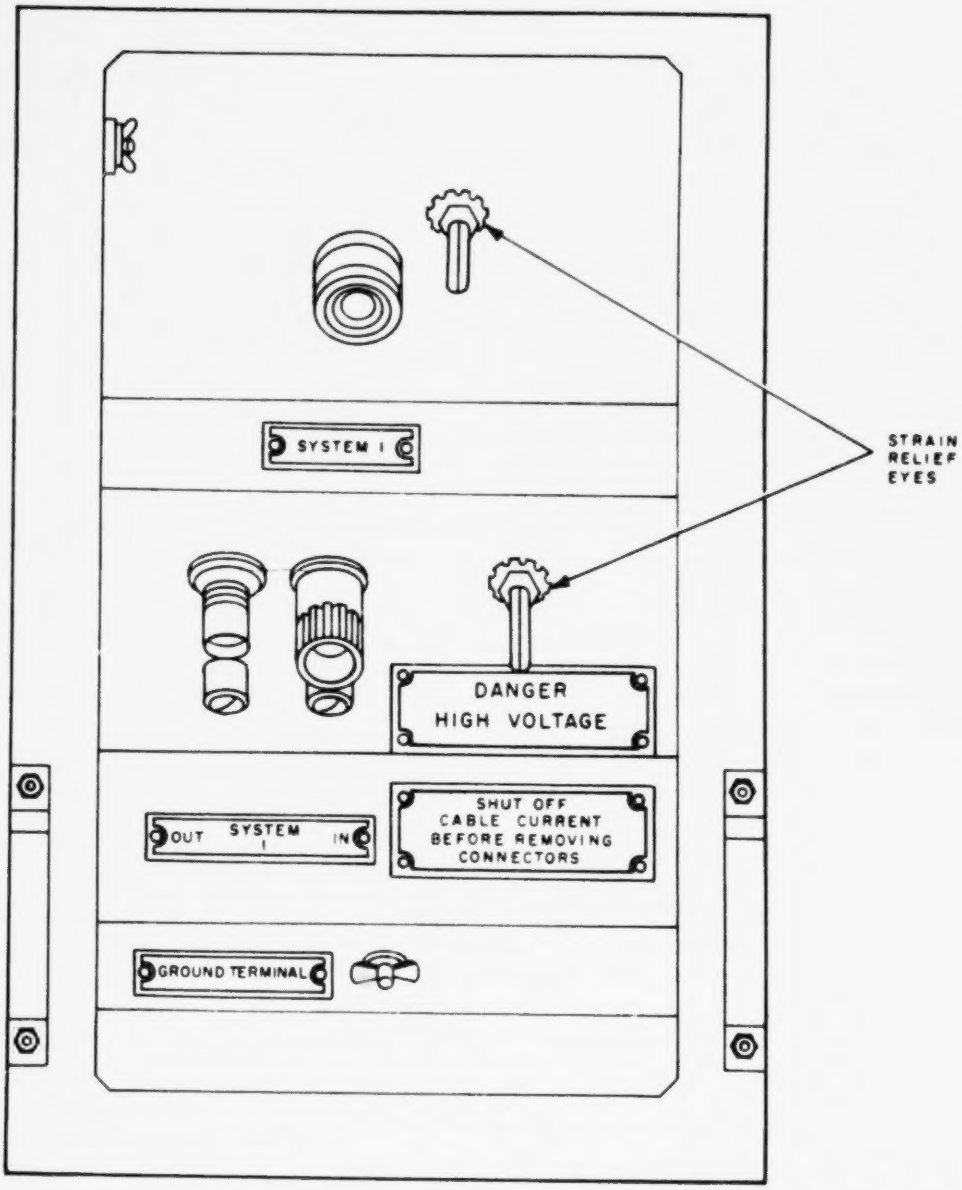

STRAIN RELIEF EYES
SYSTEM 1
DANGER HIGH VOLTAGE
OUT SYSTEM 1 IN
SHUT OFF CABLE CURRENT BEFORE REMOVING CONNECTORS
GROUND TERMINAL
EL5820-562-14-TM-14

Figure 1-11. Roadside video and antenna entrance box, exterior view, less cover.

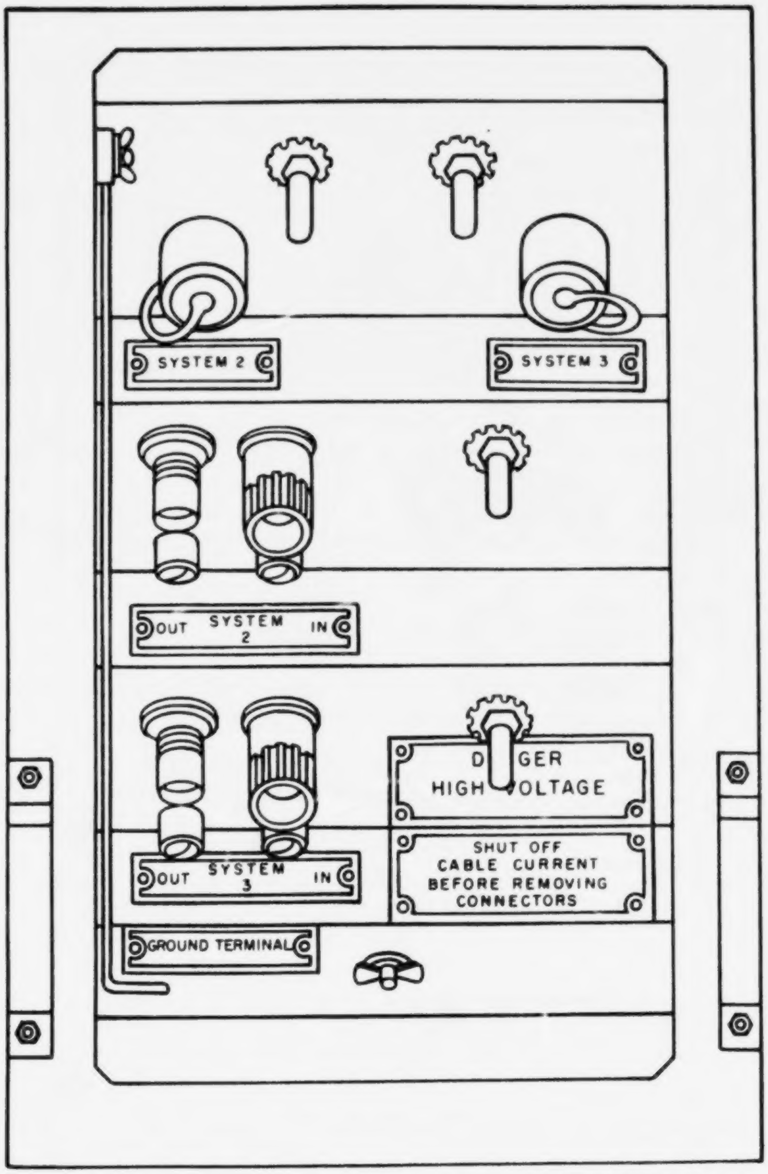

SYSTEM 2
SYSTEM 3
OUT SYSTEM 2 IN
D GER
HIGH OLTAGE
SHUT OFF CABLE CURRENT BEFORE REMOVING CONNECTORS
OUT SYSTEM 3 IN
GROUND TERMINAL
EL5820-562-14-TM-15

Figure 1-15. Curbside video and antenna entrance box, exterior view, less cover.

1-8. Differences in Models

The different models of the AN / TRC-113 are so designated because of the different equipments installed in the shelter facility (S-335 / TRC-113). The different models and the major equipments that comprise these models are designated in the chart below.

Equipment	AN / TRC-113(V)1	AN / TRC-113(V)2	AN / TRC-113(V)3	AN / TRC-113A(V)1	AN / TRC-113A(V)2	AN / TRC-113A(V)3
Radio Set AN / GRC-103(V) 1	3			3		
Radio Set AN / GRC-103(V) 2		3			3	
Radio Set AN / GRC-103(V) 3			3			3
Multiplexer TD-204 / U	3	3	3			
Multiplexer TD-754 / G				3	3	3

CHAPTER 2
INSTALLATION

2-1. Unpacking and Checking
(fig. 2-1)

a. Packaging Data. The AN/TRC-113 is packed in a reusable wooden crate. The S-335/TRC-113, which houses the equipment, is anchored to eyebolts in the skid base of the crate and is blocked at the sides and ends with lumber. The skid base has entries for handling with a forklift. The dimensions of the crate are 91 by 87 by 76 inches. The volume is 350 cubic feet, and the weight of the crate AN/TRC-113 is approximately 1,675 pounds.

b. Removal From Crate.

(1) Unfasten the lag screws with wrenches and remove the top, end, and side panels from the crate base.

(2) Loosen the turnbuckles and detach the sling assemblies from the eyebolts in the crate base.

(3) Remove the wood blocking from the ends and sides of the AN/TRC-113.

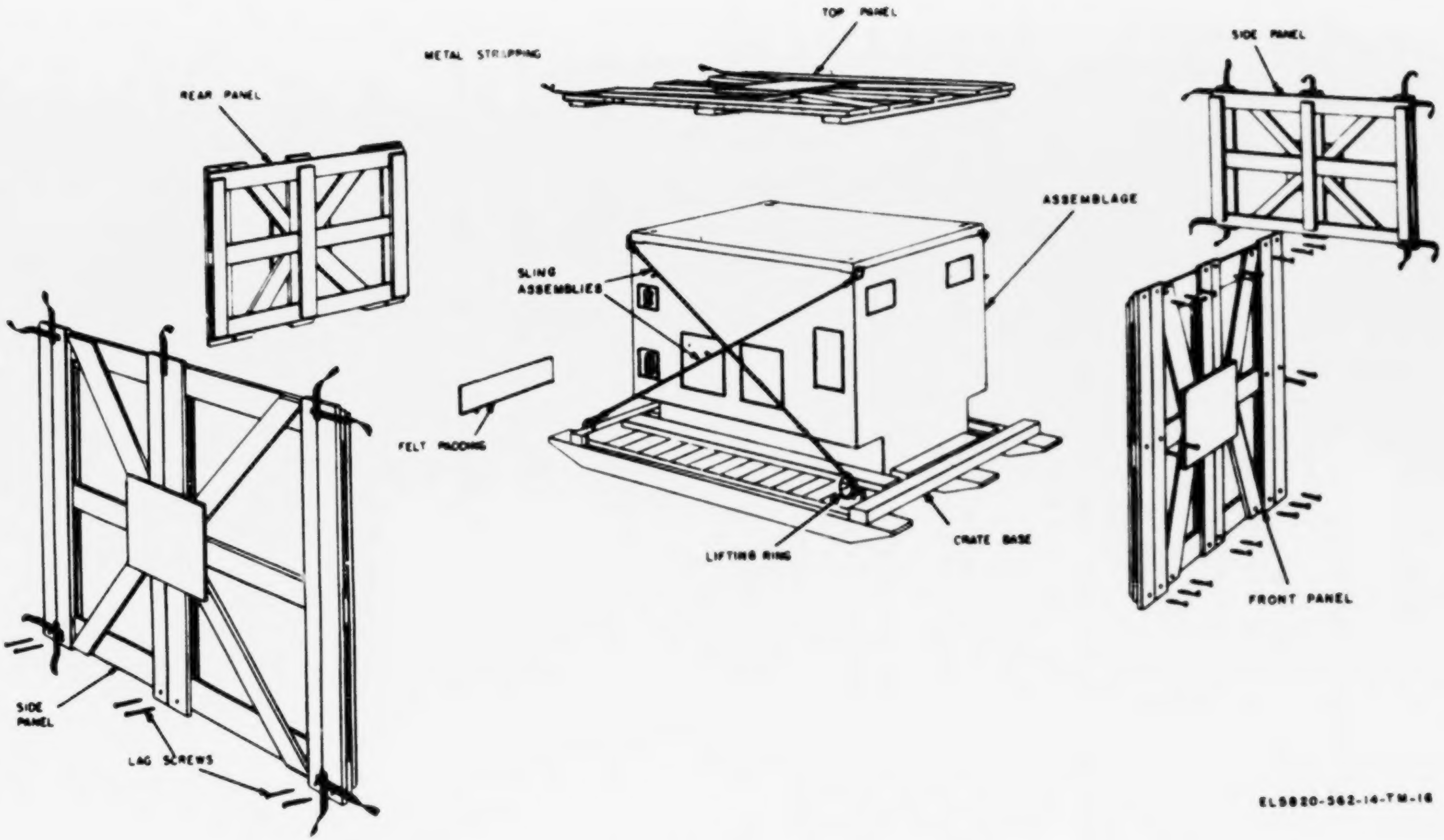
CAUTION

Be careful when handling tools, because the aluminum skin of the S-335/TRC-113 can be easily damaged.

(4) Remove the S-335/TRC-113 from the crate base. Use overhead lifting equipment whenever possible. If overhead lifting equipment is not available, remove the headers from the crate base, and drag the S-335/TRC-113 from the crate base by the towing eyes. A forklift may be used to lift the S-335/TRC-113 from either end of the crate base, if the prongs of the forklift are carefully inserted between the S-335/TRC-113 and the crate base. If a forklift is used be extremely careful, because the skin of the S-335/TRC-113 may be easily damaged by the prongs of the forklift.

(5) Forward the crate (reassembled, or with the sections tied together) to a local storage area, if practicable. The crate may be reused for shipment of similar items.

c. Checking Assemblage Contents. Unlock and open the door and check the assemblage against the packing list. If the packing list is not available, use the table of components (para 1-6).


TOP PANEL
METAL STRIPPING
SIDE PANEL
REAR PANEL
ASSEMBLAGE
SLING ASSEMBLIES
FELT PADDING
LIFTING RING
CRATE BASE
FRONT PANEL
SIDE PANEL
LAG SCREWS

EL5820-562-14-TM-16

Figure 2-1. Typical packaging diagram.

2-2. Siting

The best operating site for the AN/TRC-113 is determined by the tactical situation, and other conditions.

NOTE

> To install the AN/TRC-113 on the ground, or on a truck, four men and a device capable of lifting 1,300 pounds are required.

a. Ground Installation. When installed on the ground, the AN/TRC-113 should be placed on a firm, dry surface with good drainage; the site should be prepared and leveled. The assemblage should be placed on concrete blocks or wooden beams, if possible, and positioned to facilitate connections of power and signal cables. If a generator set is used to provide power, it should be located approximately 75 feet away from the assemblage to minimize fire hazard and generator noise interference.

b. Truck Installation.

(1) Use the sling hooks (nearest turnbuckles) to connect the sling assemblies to the lifting and tiedown points of the assemblage (fig. 2-2). Connect the sling hooks, at the opposite ends of the cables, to the lifting ring, and place the lifting ring over the lifting hook of the lifting device.

WARNING

> To avoid injury to personnel, or damage to equipment, only personnel engaged in the actual loading operation should be permitted near the truck, lifting device, and assemblage. To eliminate confusion, all instructions must come from the loading crew supervisor.

(2) Tie a ½-inch rope (at least 15 feet long) at each rear towing eye.

(3) Lower the tailgate of the truck; make sure that all tools and equipment have been removed from the body of the truck. Slowly lift the assemblage high enough to clear the body of the truck.

NOTE

> The entrance door of the assemblage must be at the rear of the truck, and the front end of the assemblage must be flush against the front of the truck body.

(4) Position a man at the free end of each of the ½-inch ropes to guide the assemblage. Back the truck slowly into position under the assemblage and slowly lower the assemblage into the truck.

WARNING

> All personnel must remain clear of the truck while the assemblage is being lowered onto the truck.

(5) Remove the lifting ring from the lifting hook and disassemble the lifting ring and the sling hooks. Remove the sling hooks from the lifting and tiedown points and the ½-inch ropes from the rear towing eyes. Raise and secure the truck tailgate.

(6) Use two sling assemblies at each side of the assembly to secure the assemblage to the truck as shown in figure 2-3.

(7) Tighten all turnbuckles evenly by hand, and then turn each turnbuckle an additional one-half turn with a bar or rod inserted into the slot of the turnbuckle.

CAUTION

> Do not overtighten turnbuckles. Overtightening turnbuckles will damage the assemblage.

(8) After the truck is driven to the operating site, lower the tailgate to the horizontal position; then remove the boarding ladder from the assemblage and secure it to the left side of the tailgate.

c. Unloading Assemblage. To unload the assemblage from the truck, reverse the procedures given in *b* above.

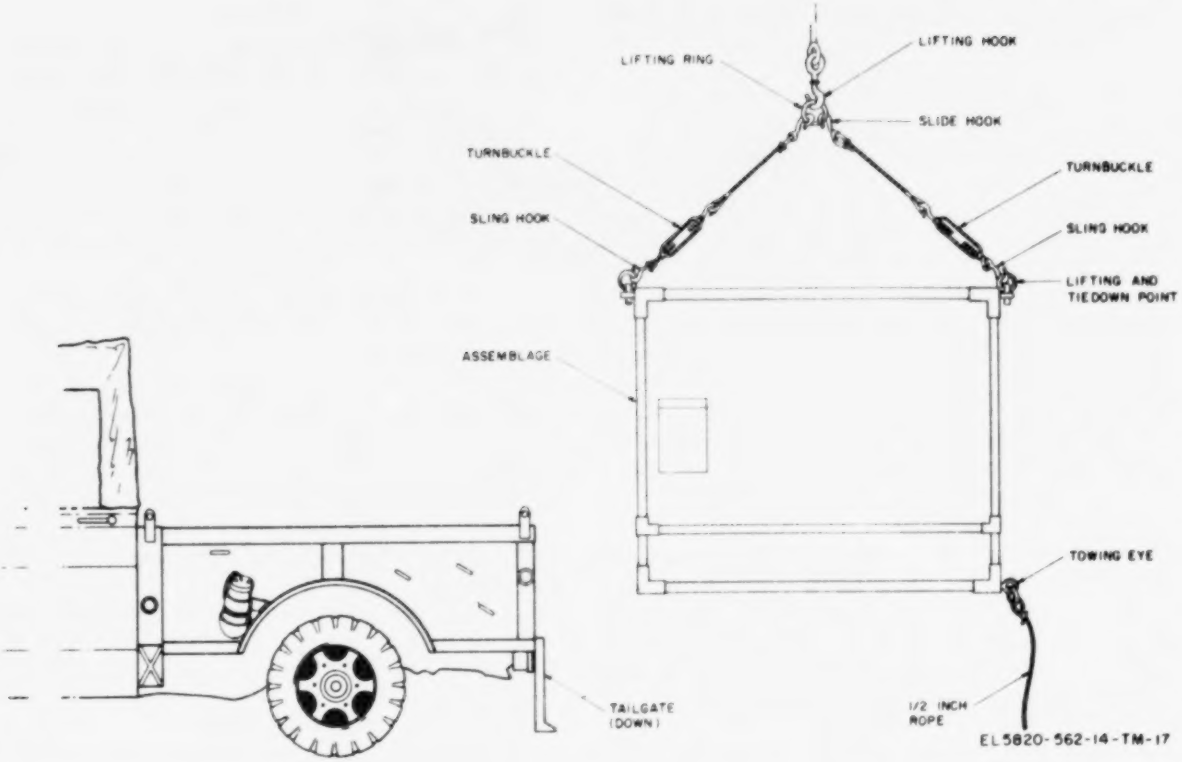
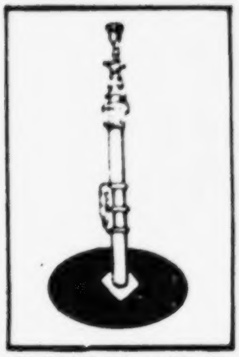

LIFTING RING
LIFTING HOOK
SLIDE HOOK
TURNBUCKLE
TURNBUCKLE
SLING HOOK
SLING HOOK
LIFTING AND TIEDOWN POINT
ASSEMBLAGE
TOWING EYE
TAILGATE (DOWN)
1/2 INCH ROPE
EL5820-562-14-TM-17

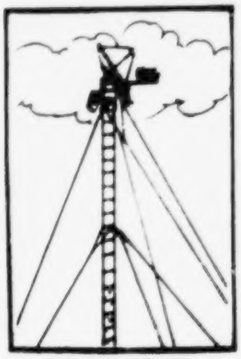
Figure 2-2. Lifting and loading AN/TRC-113 on truck.

FIXED OPERATION WITH LONG RANGE ANTENNAS

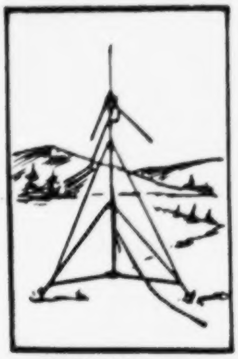
WARNING



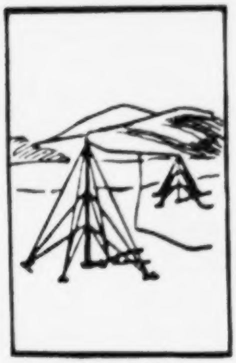
TELESCOPING ANTENNA MAST



TYPICAL TOWER



EXTENDED RANGE ANTENNA



DOUBLET ANTENNA

NEVER ERECT THESE LONG RANGE ANTENNAS DIRECTLY UNDER POWER LINES.

IF YOU MUST ERECT THESE LONG RANGE ANTENNAS NEAR POWERLINES, POWERLINE POLES OR TOWERS, OR BUILDINGS WITH OVERHEAD POWERLINE CONNECTIONS, NEVER PUT THE ANTENNA CLOSER THAN TWO TIMES THE ANTENNA HEIGHT FROM THE BASE OF THE POWERLINE, POLE, TOWER OR BUILDINGS.

NEVER ATTEMPT TO ERECT ANY LONG RANGE ANTENNA WITHOUT A FULL TEAM.

EFORE ERECTING ANY LONG RANGE ANTENNA, INSPECT ALL THE PARTS MAKING UP THE NTENNA KIT. DO NOT ERECT THE ANTENNA IF ANY PARTS ARE MISSING OR DAMAGED.

DO AS MUCH OF THE ASSEMBLY WORK AS POSSIBLE ON THE GROUND.

WHEN ERECTING THE ANTENNA, ALLOW ONLY TEAM PERSONNEL IN THE ERECTION AREA.

MAKE SURE THAT THE AREA FOR THE ANCHORS IS FIRM. IF THE GROUND IS MARSHY OR SANDY, GET SPECIFIC INSTRUCTIONS FROM YOUR CREW CHIEF OR SUPERVISOR ON HOW TO REINFORCE THE ANCHORS.

WHEN SELECTING LOCATIONS FOR ANCHORS, AVOID TRAVELED AREAS AND ROADS. IF YOU CANNOT AVOID THESE AREAS, GET SPECIFIC INSTRUCTIONS FROM YOUR SUPERVISOR AS TO WHAT CLEARANCE YOUR GUY WIRES AND ROPES MUST HAVE OVER THE TRAVELED AREAS AND ROAD.

CLEARLY MARK ALL GUY WIRES AND ROPES WITH THE WARNING FLAGS OR SIGNS SUPPLIED BY YOUR UNIT. IN AN EMERGENCY, USE STRIPS OF WHITE CLOTH AS WARNING STREAMERS.

IF YOU SUSPECT THAT POWERLINES HAVE MADE ACCIDENTAL CONTACT WITH YOUR ANTENNA, STOP OPERATING, ROPE OFF THE ANTENNA AREA, AND NOTIFY YOUR SUPERIORS.

THE WEATHER IN YOUR AREA CAN CAUSE ICE TO FORM ON YOUR LONG RANGE ANTENNA AND ITS UY WIRES AND ROPES, ADD EXTRA GUYS TO SUPPORT THE SYSTEM. ROPE OFF THE AREA AND POST IT WITH WARNING SIGNS LIKE "BEWARE OF FALLING ICE".

DO NOT TRY TO ERECT ANY ANTENNA DURING AN ELECTRICAL STORM.

KEEP A SHARP EYE ON YOUR ANCHORS AND GUYS. CHECK THEM DAILY AND IMMEDIATELY BEFORE AND AFTER BAD WEATHER.

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2 IF POSSIBLE , TURN OFF THE ELECTRICAL POWER

3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL

4 SEND FOR HELP AS SOON AS POSSIBLE

5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

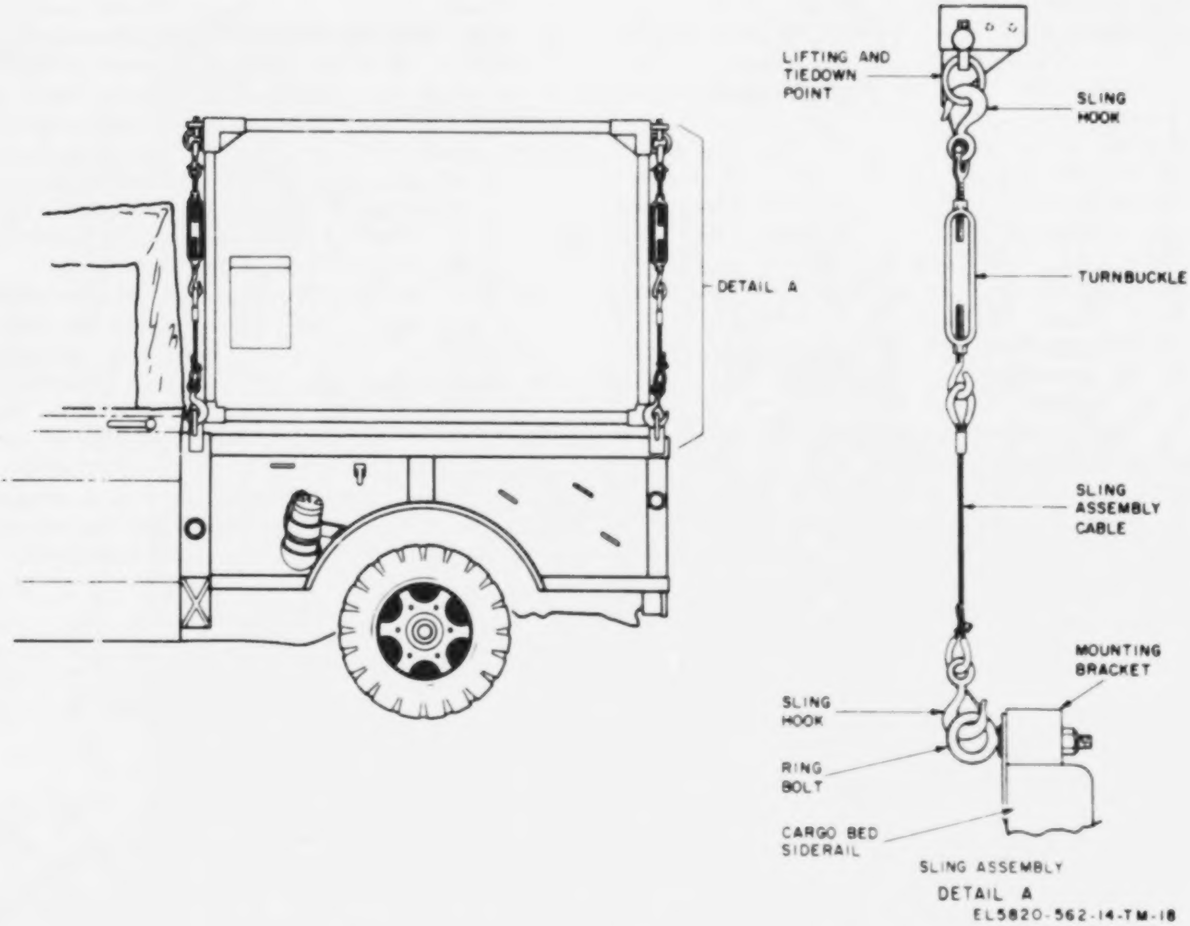

LIFTING AND TIEDOWN POINT
SLING HOOK
TURNBUCKLE
DETAIL A
SLING ASSEMBLY CABLE
MOUNTING BRACKET
SLING HOOK
RING BOLT
CARGO BED SIDERAIL
SLING ASSEMBLY
DETAIL A
EL5820-562-14-TM-18

Figure 2-3. Securing AN/TRC-113 on truck.

2-3. Grounding

The AN/TRC-113 must be properly grounded *before* input power is connected. Select a grounding site (within 6 feet of the power entrance box) that is low and damp, and that will not interfere with the entrance door, field wires, and power or signal cables.

a. Loosen and lift the cover of the power entrance box (fig. 1-1).

b. Use the cover support to secure the cover in the open position.

c. Remove a ground rod and the sledge hammer from the mountings in the assemblage (fig. 1-9).

d. Remove any dirt or grease from the ground rod.

e. Scoop out a small hole, about 6 inches deep, at the selected grounding site.

f. Drive the ground rod into the hole until the top of the ground rod is approximately 3 inches above the bottom of the hole.

g. Remove a 10-foot ground strap from the storage compartment of the assemblage.

h. Connect one end of the ground strap to the ground rod, and the other end to the lower ground terminal in the power entrance box (fig. 1-13).

i. Saturate the ground around the rod with water to keep it moist.

j. If a generator set is used to supply ac power, ground it in the same manner as the assemblage.

2-4. Antenna Installation

WARNING

> During installation of this equipment, conform to all safety requirements set forth in TB SIG 291. Injury or DEATH can result from failure to comply with safe practices.

The Antenna AS-1852/GRC-103(V) (Band I), AS-1853/GRC-103(V) (Band II), and AS-1854/GRC-103(V) (Band III) have a common, variable-corner reflector which is used with Band I, II, or III plug-in dipole element. Figure 2-4 shows the reflector and Band I dipole. Each antenna consists of either Band I, II, or III antenna, Mast AB-952/GRC-103(V) (fig. 2-5), Mast Extension Kit MK-1009/GRC-103(V) (fig. 2-6), the coaxial antenna cables (fig. 2-7), and the mast extension kit coaxial antenna cables (fig. 2-8). Mast AB-952/GRC-103(V) includes Elevator, Antenna AB-1072/GRC-103(V), seven Mast Sections AB-1071/GRC-103(V), and Accessory Kit, Mast MK-1069/GRC-103(V), and provides the necessary hardware for an erected antenna 35 feet high. Mast Extension Kit MK-1009/GRC-103(V) provides the additional hardware needed for an erected antenna 50 feet high.

a. General.

(1) Depending upon the application, the AN/TRC-113 may require up to three antennas. The following instructions provide the procedure to be followed for each antenna required.

(2) The guy anchoring methods to be used depend on the prevailing conditions found at the site. The standard method, to be used in normal soil conditions, is shown in A, figure 2-9, for the 35-foot antenna, and in figure 2-10 for the 50-foot antenna extension. Where necessary, use a rope (at least ½ inch thick), a cable, or piece of heavy wire, and wrap it around a solidly implanted object such as a tree stump, a tree (B, fig. 2-9), or a rock. In soft earth, when fixed objects are not available, use a deadman anchor (C, fig. 2-9). Use stakes (A, fig. 2-9) for a 50-foot mast erected in shale, sandstone, soft rock, hardpan, ice, or permafrost.

(3) The site selected for erecting the antenna must be reasonably flat, with a central clear area of approximately 10 square feet. The separation between the mast assembly location, and the shelter should not exceed 25 feet. There must be clear aerial patchs to the guy stake locations at three points equally spaced on a 30-foot circle which is centered on the central clear area. The slope of the antenna central clear area should not form an angle of more than 15 degrees with the horizontal.

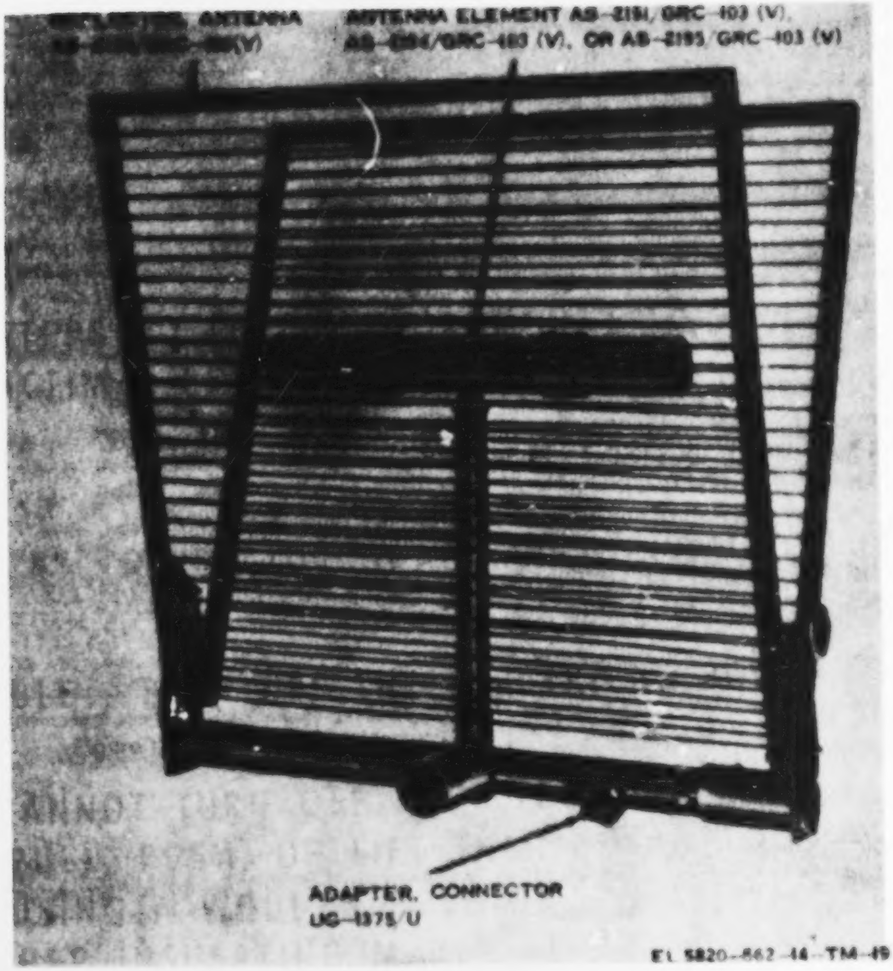
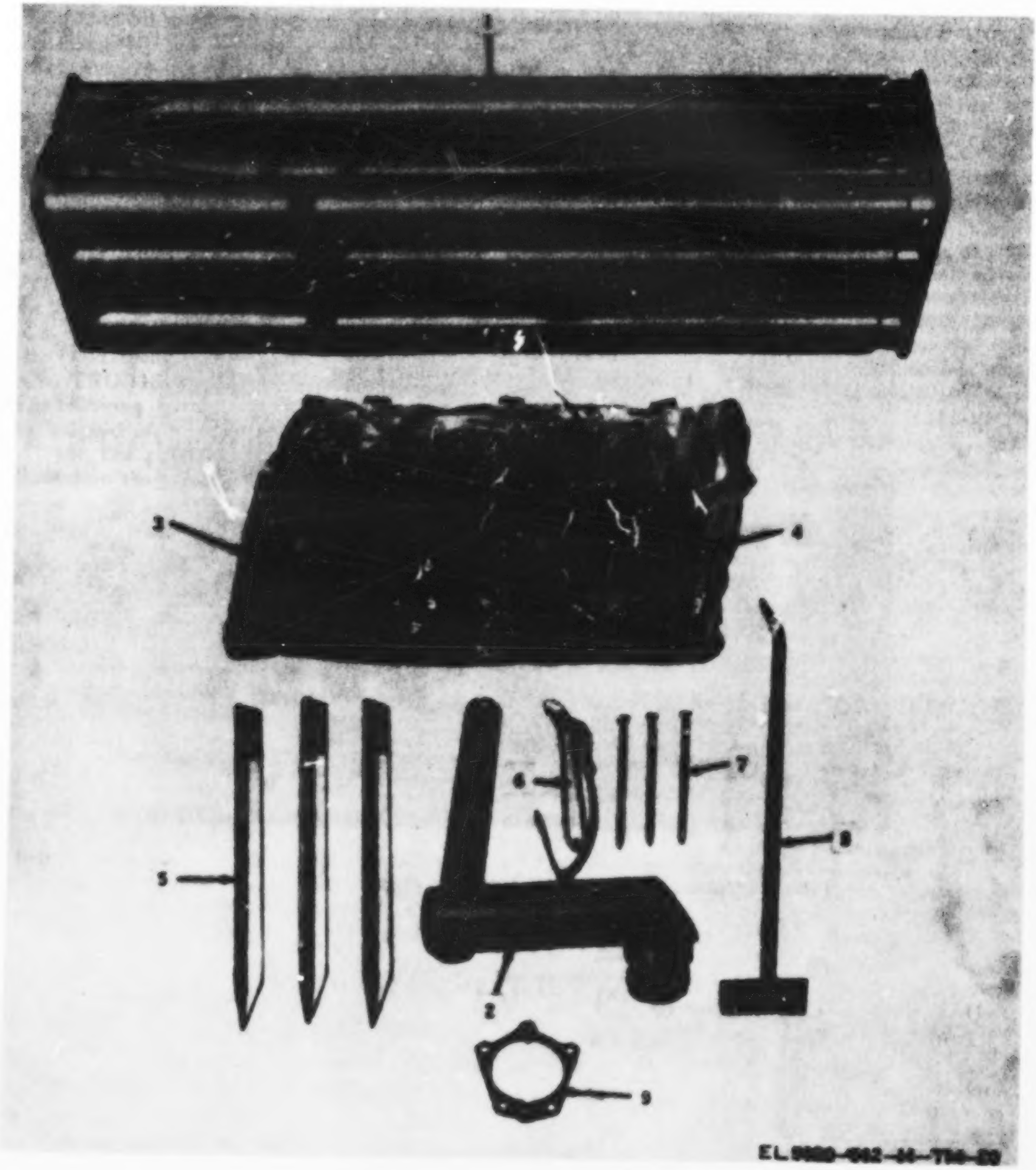
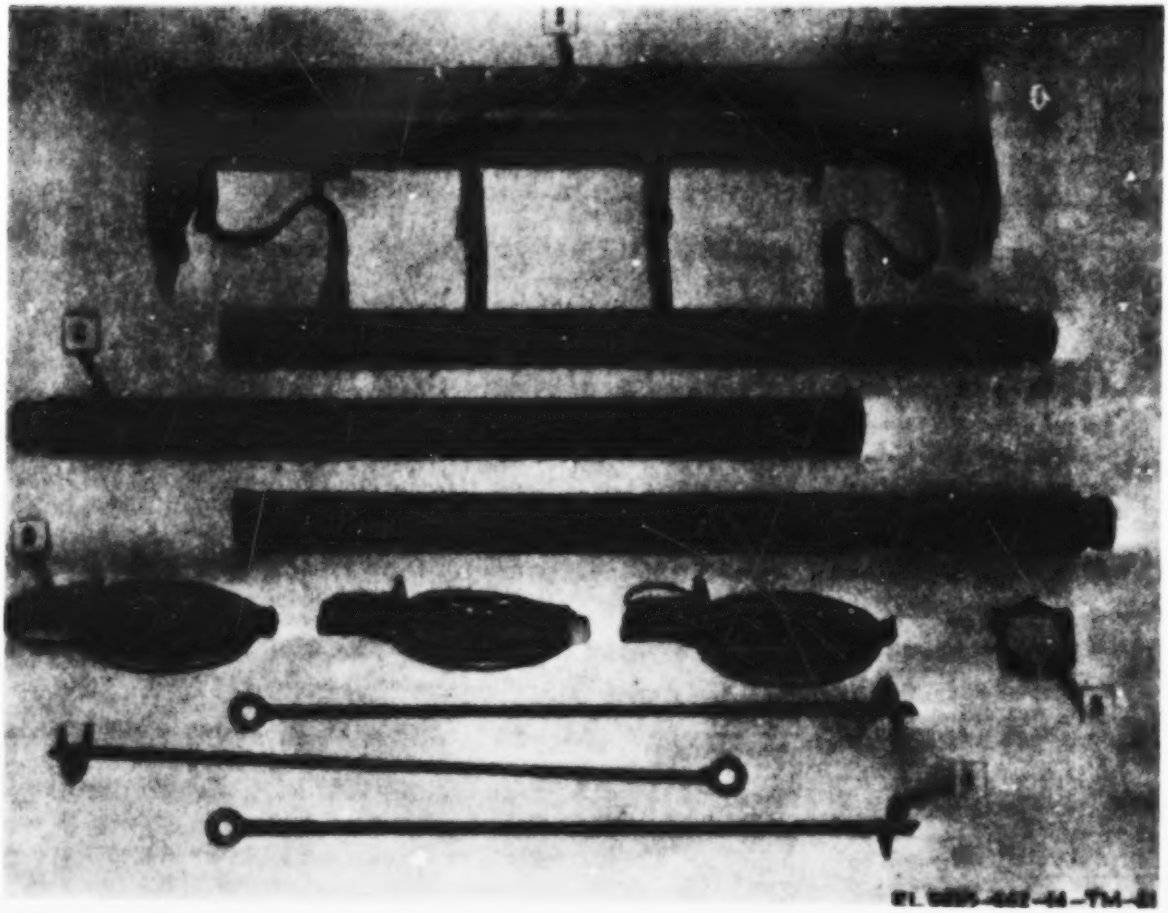

REFLECTOR, ANTENNA
AS-[illegible](V)
ANTENNA ELEMENT AS-2191/GRC-103 (V),
AS-2194/GRC-103 (V), OR AS-2195/GRC-103 (V)
ADAPTER, CONNECTOR
UG-1375/U
EL 5820-562-14-TM-49

Figure 2-4. Antenna AS-1852/GRC-103(V).



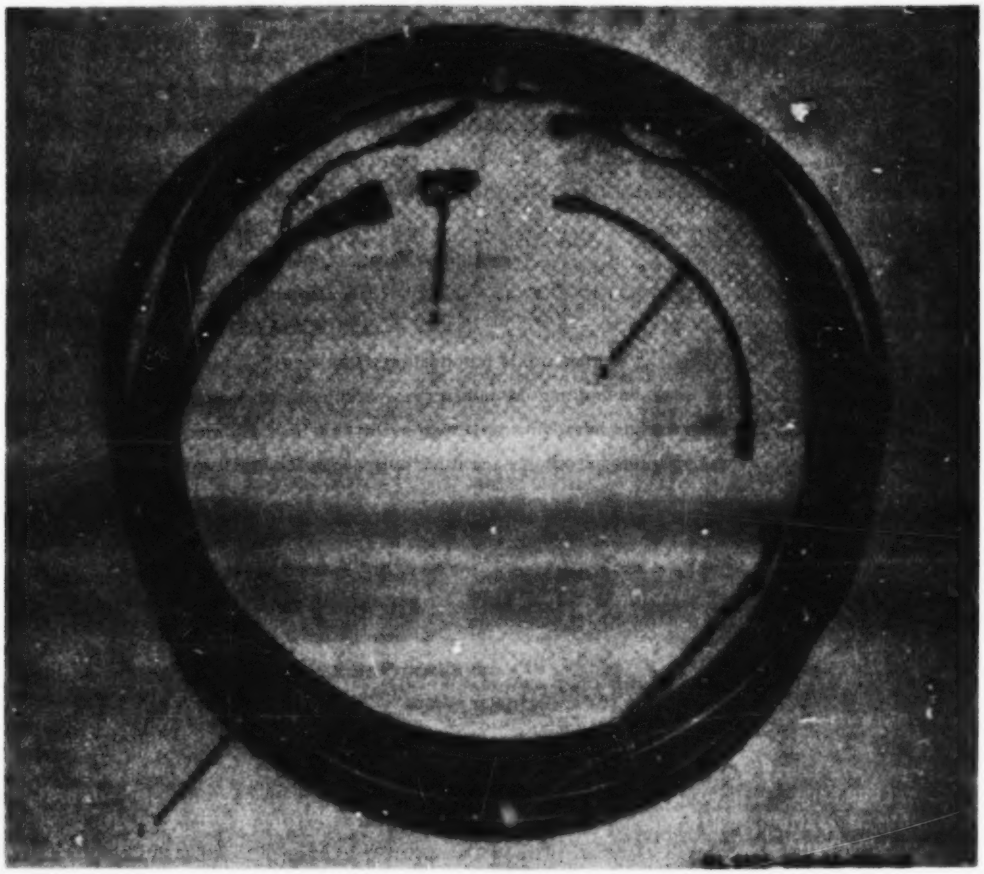
1. Mast assembly, consisting of: Elevator, Antenna AB-1072/GRC-103(V) and Mast Section AB-1071/GRC-103(V) (seven each)
2. Reflector attachment assembly
3. Accessories waterproof bag
4. Guy wires (three red-coded, three white-coded)
5. Guy stakes, 24-inch (three each)
6. Strap wrench
7. Spikes (three each)
8. Universal tool
9. Guy attachment ring

Figure 2-5. Mast AB-952/GRC-103(V), components.



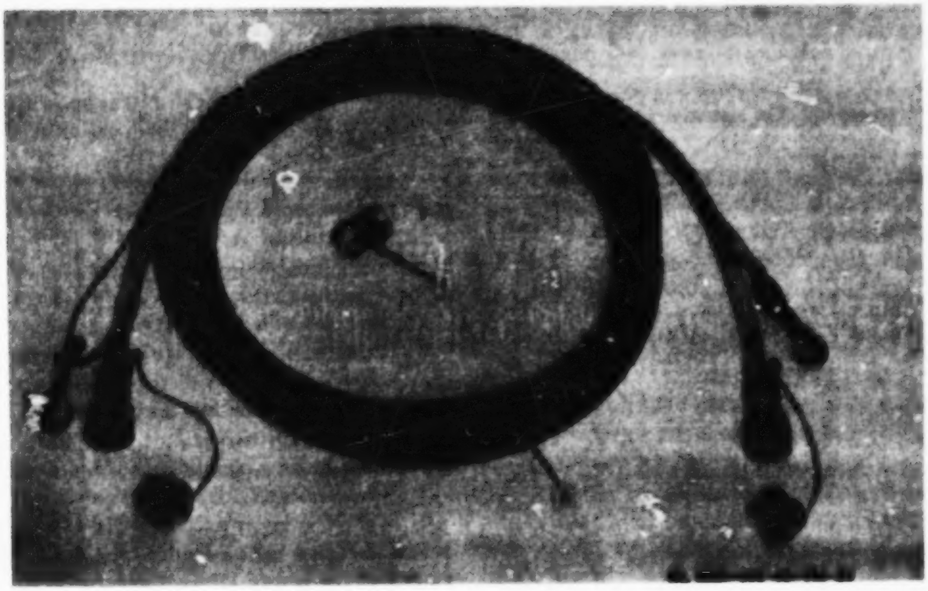
1. Case, Mast Extension Kit CY-6148/GRC-103(V)
2. Mast Section AB-1071/GRC-103(V) (three each)
3. Guy wires (three blue-coded)
4. Guy anchor (three each)
5. Guy attachment ring

Figure 2-6. Mast Extension Kit MK-1009/GRC-103(V), components.



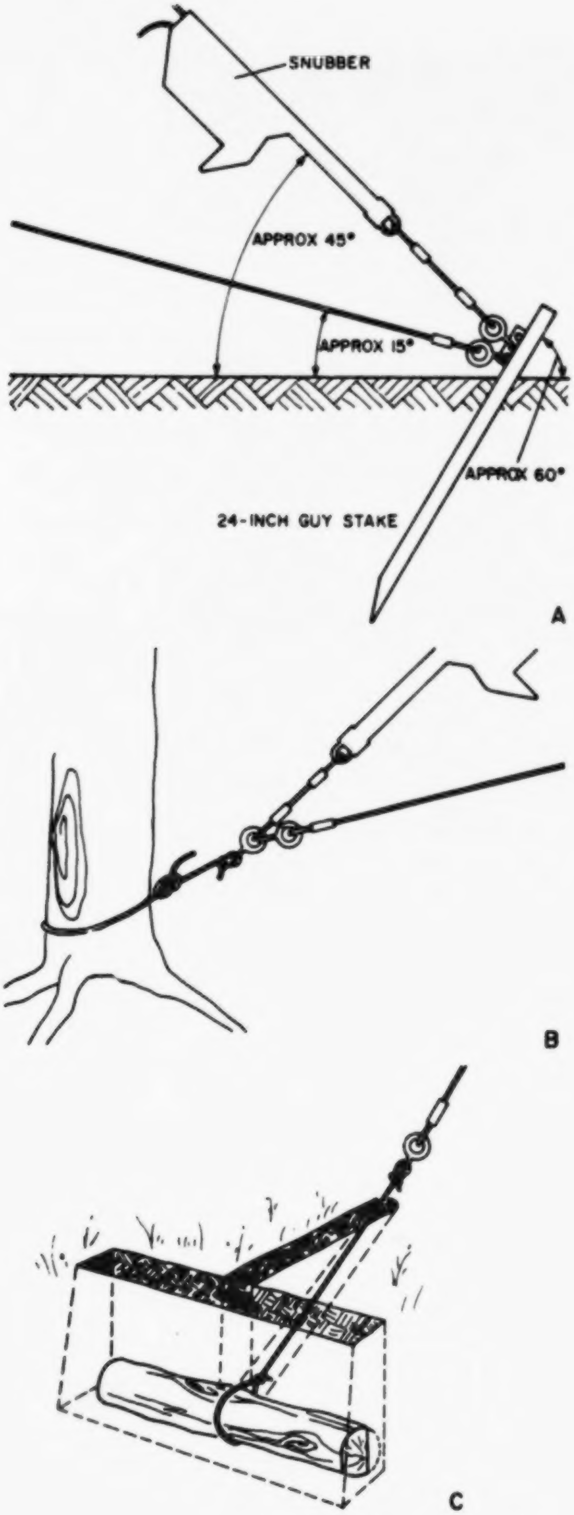
1 Cable Assembly RF CG-3443/U (50 ft)
2 Adapter, Connector UG-1375/U
3 Cable Assembly RF CG-3444/U (1 ft, 6 in.)

Figure 2-7. Coaxial antenna cables.



1. Adapter, Connector UG-1373/U
2. Cable Assembly RF CG-3443/U (25 ft)

Figure 2-8. Mast extension kit antenna cables.



EL5820-562-14-TM-24

Figure 2-9. Guy anchoring methods.

b. Location and Installation of Guy Stakes. Unload the antenna system in the central clear area, and open the accessories kit. Determine the prevailing wind direction, and proceed to install the guy stakes.

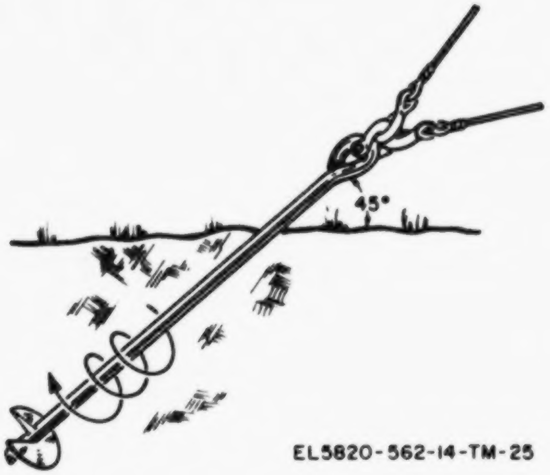
(1) Place the mast assembly upright at the center of the area selected as the mast location (point M, fig. 2-11).

(2) Pick up the universal tool (8, fig. 2-5) and one guy stake. Walk 12 paces (30 feet) directly to windward (point A, fig. 2-11). Hammer the guy stake into the ground at a 60-degree angle slanted away from the mast (A, fig. 2-9). If a screw anchor is to be used (50-foot antenna), screw it into the ground at a 45-degree angle slanted toward the mast (fig. 2-10), inserting the universal tool through the anchor eye for leverage.

(3) Pick up two stakes, and continue past the mast location in a straight line for another 6 paces (15 feet) to point D. Drop one guy stake.

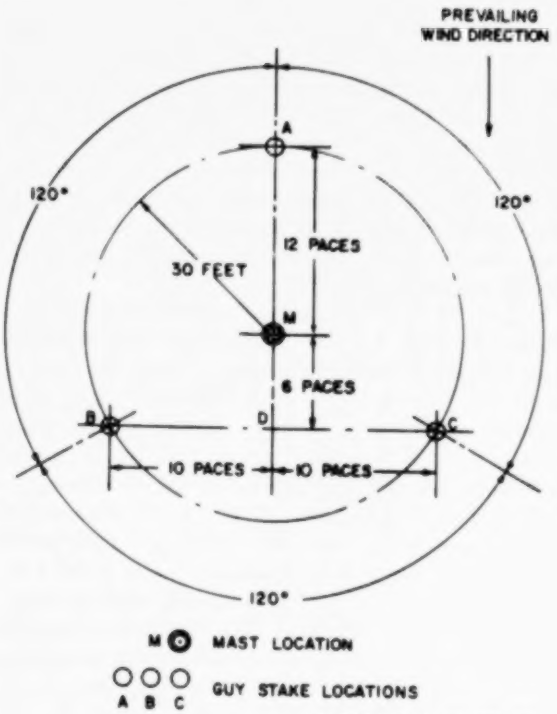
(4) Turn right and walk 10 paces (25 feet) to point B. Drive in the second guy stake, and retrace 10 paces to point D.

(5) Pick up the third guy stake which was dropped at point D, and continue in a straight line for 10 paces to point C. Drive in the third guy stake.



EL5820-562-14-TM-25

Figure 2-10. Installation of screw-type guy anchors.



EL5820-562-14-TM-26

Figure 2-11. Layout of antenna site.

c. Assembly of Launcher and Antenna.

(1) Position the mast assembly so that its front faces into the wind. The front edge of the base plate is indicated in figure 2-12.

(2) Loosen the canvas straps that tension the binding wires, and unsnap the binding wires from the top of the mast assembly.

(3) Raise the top section of the launcher approximately ¾ inch, allowing the loading catch on the base plate to secure it in this higher position. Remove the six mast sections stored around the launcher by raising them one by one and lifting the lower end clear of its cap on the base plate (A, fig. 2-12). The center mast section remains stored in the erection mechanism.

(4) Swing aside the sorted mast section retaining clip on the top of the launcher (B).

(5) Set the two brake control levers (C) so that the arrows point upward. If either of the brake rings in the erection mechanism binds, release it by hand.

(6) Push the center mast section upward until it protrudes approximately 18 inches above the top plate of the launcher (D, fig. 2-13).

(7) Tilt the launcher sufficiently to permit convenient insertion of the reflector attachment assembly into the top of the center mast section. Rotate the reflector attachment assembly until the stripes on the mast section and the reflector attachment assembly line up and the catch locks in place (E).

(8) Open the reflector to scissor hinge setting 1 as indicated by the numerals adjacent to the screw fasteners on the hinge plates (F).

(9) Lock it in this position with the screw fasteners at each end of the hinge. Make sure that both screw fasteners are seated correctly in their detents.

(10) A dipole (G) is normally stored in the operating position in the reflector. If the dipole requires installation, insert the stem into the mounting stub on the reflector, push it in against the spring, and lock it in position by rotating it one-twelfth of a turn clockwise until the yellow stripes on the dipole stem and the mounting stub line up and the catch locks in place.

(11) Connect Cable Assembly RF CG-3444/U (3, fig. 2-7) between the connector at the rear of the dipole and Adapter, Connector UG-1375/U on the reflector spine (H, fig. 2-13).

(12) Tilt the launcher, and fit the assembled antenna on the reflector attachment assembly (I) in the appropriate polarization as shown in figure 2-14. The yellow stripe on the antenna must line up with the yellow stripe on the reflector attachment assembly so that the dipole is directly over the mast section.

(13) Stand the launcher upright, and secure the launcher base plate to the ground by driving the three spikes with the universal tool supplied, through the holes identified by yellow band near the edge of the base plate (J, fig. 2-15).

(14) Grasp the launcher climbing steps, and raise the launcher a few inches. Rotate it through 90 degrees to the right or left (K). Raise the launcher an additional 2 feet until the entire yellow stripe on the lower part of the telescoping leg is exposed. Rotate the launcher back through 90 degrees until the yellow stripes on the upper and lower parts of the leg are in line. Lower the launcher until a definite stop is felt, and try to rotate the launcher to be sure that it is locked in position.

(15) Snap tne free ends of the red-coded guy wires to the bottom holes in the guy stakes. Snap the snubber ends of the red-coded guy wires to the guy attachment lugs (painted red) on the bottom of the launcher top plate (L).

NOTE

The snubbers of the red-coded guy wires are marked with an arrow and the legend TO MAST. Ignore this arrow.

(16) Tension the red-coded guy wires by pulling the wires through the snubbers (M) so that the launcher is vertical. Lock the snubbers. Check to see that the bubble is in the center of the spirit level on the launcher leg. Fine adjustments can be made with the turnbuckles on the snubbers. There should be no appreciable free movement of the upper part of the launcher.

(17) Climb up the launcher steps, and fit the guy attachment ring into the gap in the joint between the reflector attachment assembly and the mast section (N). When the antenna height is to be 35 feet, snap the white-coded wires to the holes in the attachment ring. When the antenna height is to be 50 feet, snap the blue-coded guy wires into the holes in the guy attachment ring. One of the guy wire snaps is used to hold the two sections of the guy attachment ring together.

(18) Pay out the complete length of each of the guy wires and attach them to the guy anchors. Attach the white-coded guy wires to the middle holes of the guy stakes and the blue-coded wires to the upper holes. *Do not tension the wires.*

(19) Attach the cable grip (o) on Cable Assembly RF CG-3433/U (50 ft) (1, fig. 2-7) to one of the remaining free holes in the guy attachment ring. Connect Cable Assembly RF CG-3443/U (50 ft) to Adapter, Connector UG-1375/U on the spine of the antenna reflector.

(20) Unpin the jacking lever from its stored position, and pin it to the clevis on the operating rod of the lower brake ring (P, fig. 2-16).

WARNING

> Be extremely careful when erecting the antenna system in winds stronger than 25 miles per hour. If the wind is strong, station at least one man to hold the windward upper guy to maintain adequate tension to keep the mast vertical while it is being raised.

(21) Raise the mast section in the launcher by pumping the jacking lever until an approximately 4-inch long portion of the mast section remains below the lower roller guides (Q, fig. 2-16). Continue raising the mast section slowly until the automatic stop operates and prevents further motion.

(22) Place another mast section under the mast section just raised (R). Push the automatic stop clear, align the keyways in the female end of the second mast section with the keys on the male end of the first mast section, push up the second mast section with the keys on the make end of the first mast section, push up the second mast section, and twist it until the yellow stripes on the two mast sections are in line and the catch locks in place. Check to see that the mast sections are locked, and then repeat the procedure in (21) above.

(23) When the antenna height is to be 35 feet, repeat procedure (22) above until the last mast section is locked in position, but do not jack the section up. Make sure that the yellow stripe at 0 degree on the azimuth plate is in line with the yellow stripe on the last mast section. Set the two brake control levers so that the arrows point downward. Using the jacking lever, lower the mast until the slot in the last section engages with the peg in the azimuth plate (S, fig. 2-17).

(24) When the antenna height is to be 50 feet, repeat the procedure in (22) above until the sixth mast section is locked in position. Jack the mast up until the joint between the fifth and sixth mast sections is just clear of the launcher top plate. Climb up the launcher steps, and fit a guy attachment ring into the gap in the joint between the fifth and sixth mast sections. Snap the white-coded guy wire snaps into the holes in the guy attachment ring. One of the guy wire snaps is used to hold the two sections of the guy attachment ring in place. Connect the middle cable grip of Cable Assembly RF CG-3443/U (50 feet) to one of the remaining free holes in the guy attachment ring. Repeat the procedures in (21) and (22) above until the last section is locked in position, but do not jack it up. Make sure that the yellow stripe at 0 degree on the azimuth plate is in line with the yellow stripe on the last mast section. Set the two brake control levers so that the arrows point downward. Using the jacking lever, lower the mast until the slot in the last mast section engages with the peg in the azimuth plate (S).

(25) Tension the guy wires by feeding the wires through the snubbers so that the mast is straight and vertical, and the guy wires are just tight. Lock the snubbers. Compare the mast with a known vertical object, or with a plumbline, from the front and one side. Check for overall straightness by comparison with the guy wires.

(26) Remove the pin from the clevis on the operating rod of the lower brake ring, and move the jacking lever to its stored (vertical) position. Wrap the chain around the operating arm hinged to the top of the jacking lever, and insert the pin to lock the lever in the stored position (T).

(27) Use the supplied strap wrench to orient the mast by rotating the lowest mast section. Aim the open side of the antenna in the assigned direction. The open side of the antenna should be in line with the yellow stripe on the mast section and the 0 degree reference on the azimuth plate. Note the indication on the azimuth plate opposite the mark on the launcher base plate for reference

during more precise orientation of the antenna. A more precise orientation should be made later by maximizing the received signal strength on the radio receiver. Lock the mast in position by means of the azimuth lock turnscrew at the side of the azimuth plate (U).

(28) Check the spirit level (V) to see that the launcher is still level. Adjust the red-coded guy wires, if necessary. Use the snubber turnbuckles for fine adjustments.

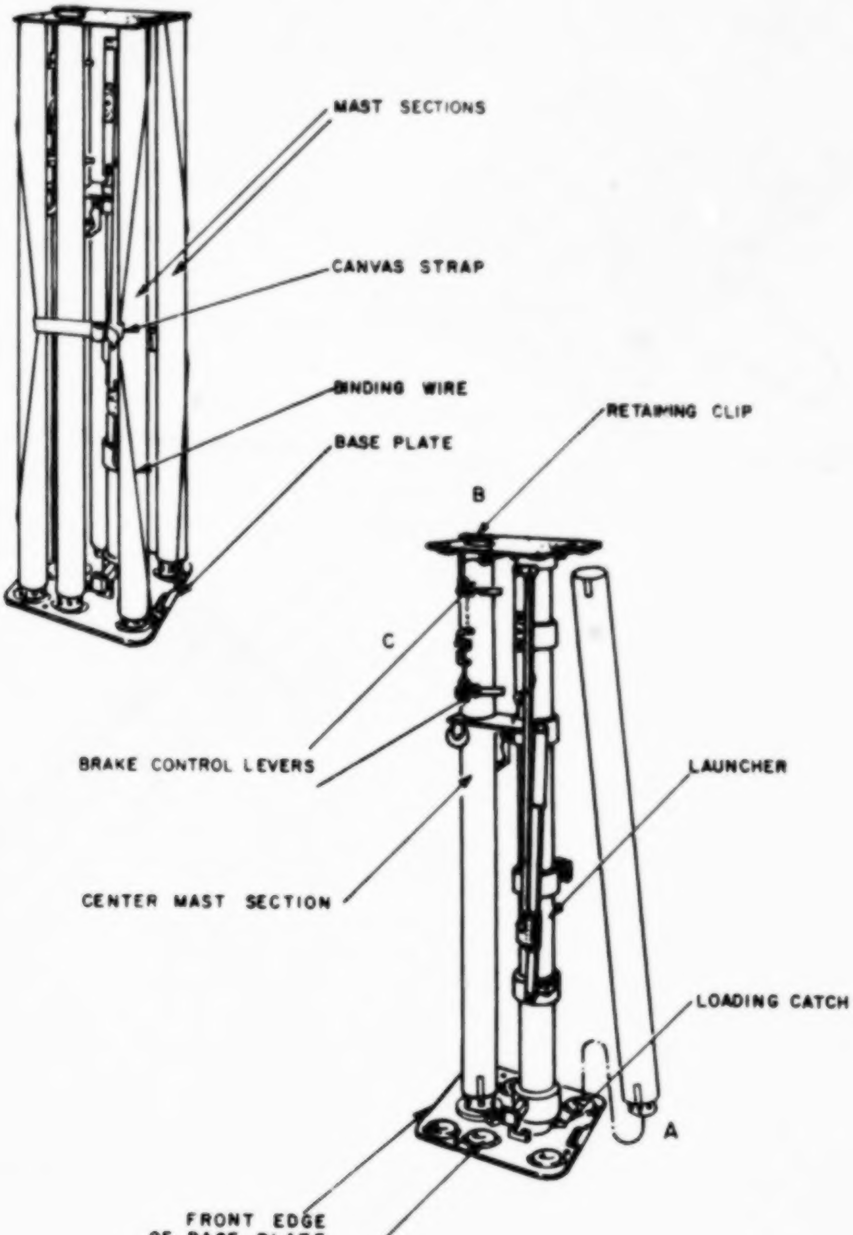

MAST SECTIONS
CANVAS STRAP
BINDING WIRE
BASE PLATE
RETAINING CLIP
B
C
BRAKE CONTROL LEVERS
LAUNCHER
CENTER MAST SECTION
LOADING CATCH
A
FRONT EDGE OF BASE PLATE
CAP
EL5820-562-14-TM-27

Figure 2-12. Removal of mast sections from launcher.

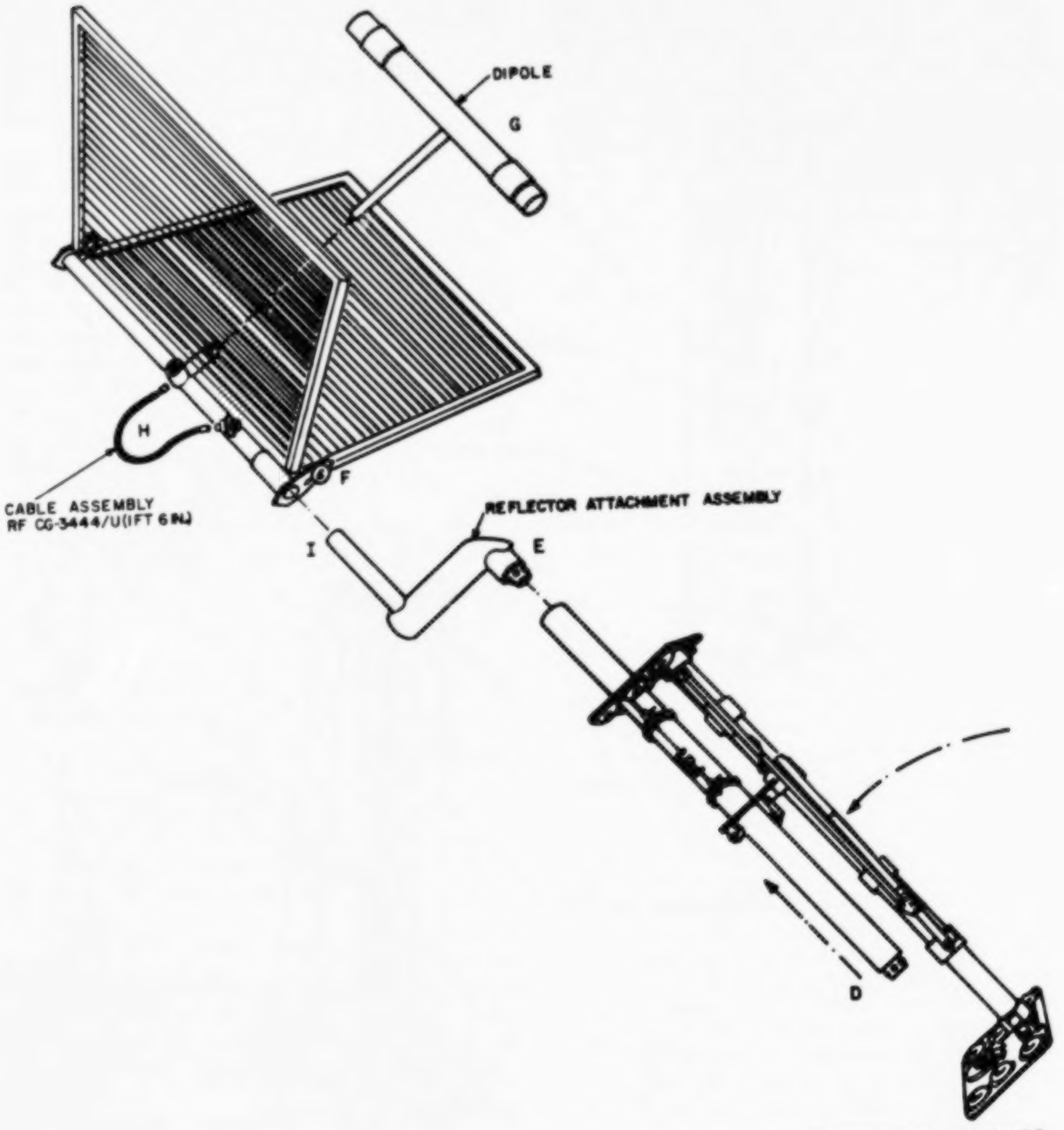

DIPOLE
G
H
CABLE ASSEMBLY
RF CG-3444/U(1FT 6 IN)
F
REFLECTOR ATTACHMENT ASSEMBLY
I
E
D
EL5820-562-14-TM-28

Figure 2-13. Mounting antenna on mast.

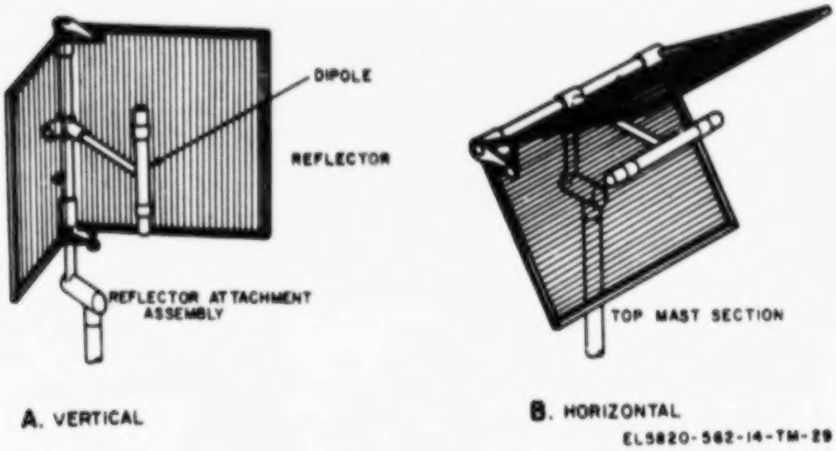

DIPOLE
REFLECTOR
REFLECTOR ATTACHMENT ASSEMBLY
A. VERTICAL
TOP MAST SECTION
B. HORIZONTAL
EL5820-562-14-TM-29

Figure 2-14. Antenna polarization.

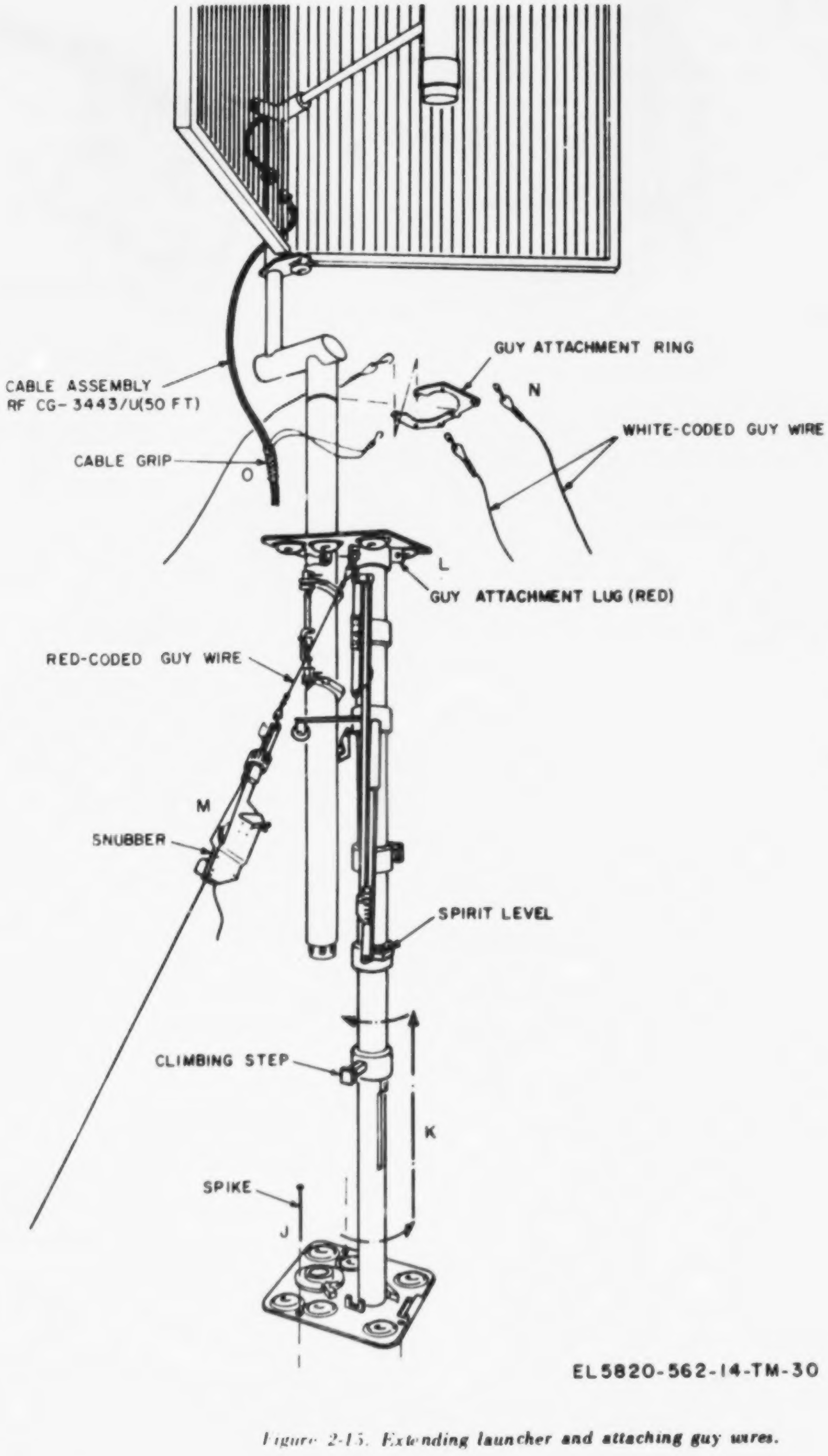

GUY ATTACHMENT RING
N
CABLE ASSEMBLY
RF CG-3443/U(50 FT)
WHITE-CODED GUY WIRE
CABLE GRIP
O
L
GUY ATTACHMENT LUG (RED)
RED-CODED GUY WIRE
M
SNUBBER
SPIRIT LEVEL
CLIMBING STEP
K
SPIKE
J
EL5820-562-14-TM-30

Figure 2-15. Extending launcher and attaching guy wires.

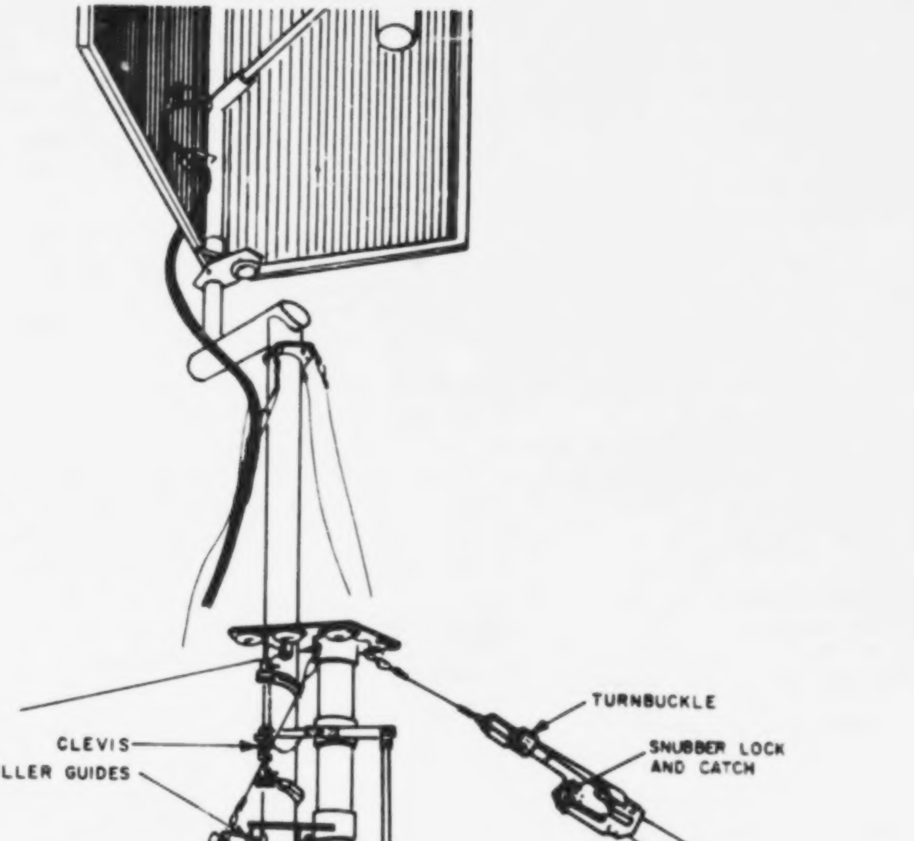

TURNBUCKLE
CLEVIS
ROLLER GUIDES
SNUBBER LOCK AND CATCH
Q
HORIZONTAL YELLOW STRIPE
AUTOMATIC STOP
JACKING LEVER
P
R
EL5820-562-14-TM-31

Figure 2-16. Inserting and raising mast sections on launcher.

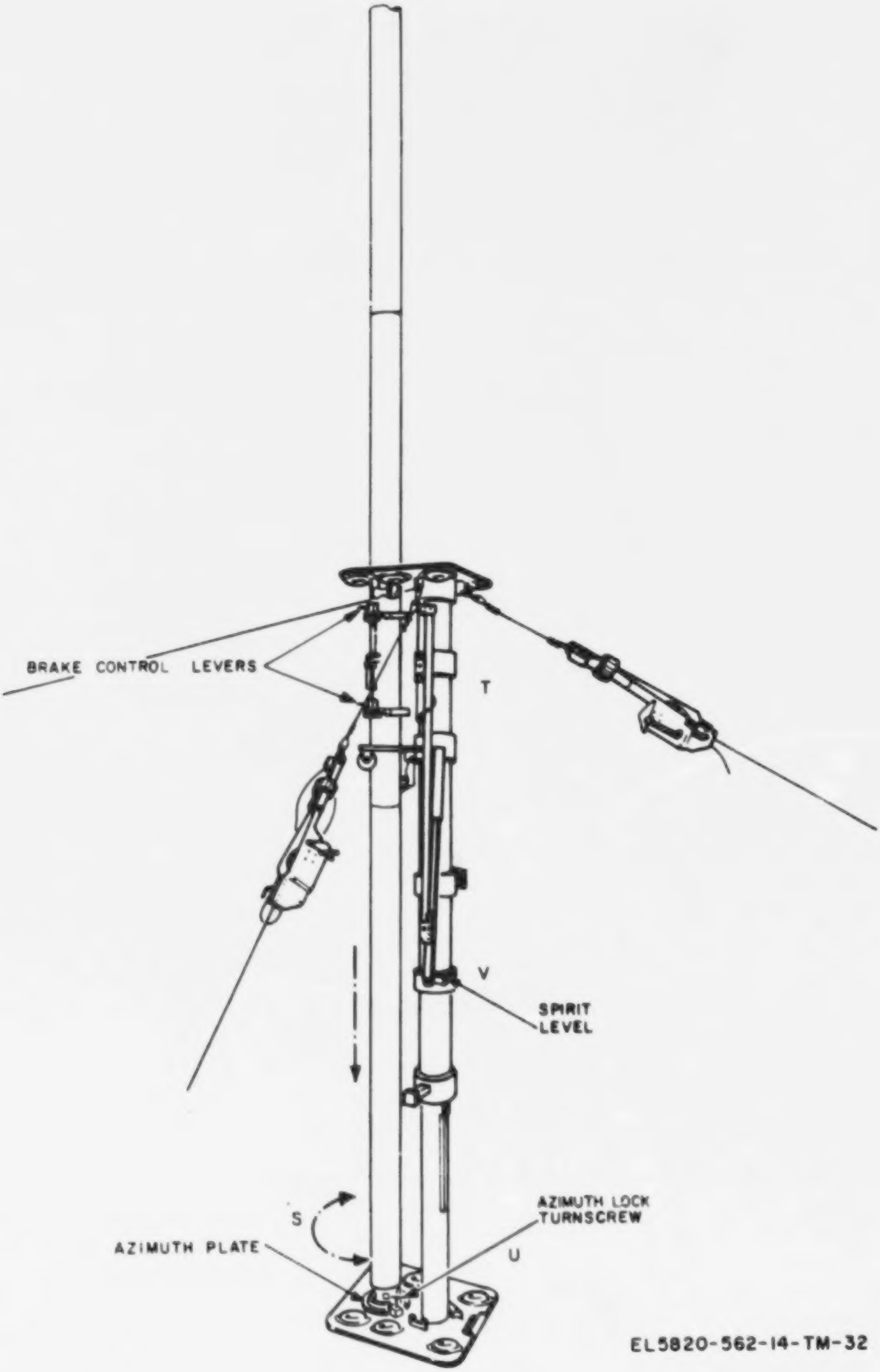

BRAKE CONTROL LEVERS
T
V
SPIRIT LEVEL
S
AZIMUTH PLATE
AZIMUTH LOCK TURNSCREW
U
EL5820-562-14-TM-32

Figure 2-17. Inserting final mast section and stowing jacking lever.

2-5. Power Connections

CAUTION

Grounding connections (para 2-3) must be completed *before* power is connected to the AN/TRC-113. Before operating generator sets, assure that the internal power selector switch is set to the type of service desired.

a. Preliminary Procedures.

(1) Make sure that all circuit breakers and equipment power switches in the assemblage are in the *off* position.

(2) Remove the power cable assembly and cable reel from the generator set.

CAUTION

When the POWER 115V AC OUT connector in the AN/TRC-113 power entrance box is used to supply power to another assemblage/equipment, do not allow the sum of the current drawn by the load connected to the POWER 115V AC OUT connector and the current drawn by the AN/TRC-113 to exceed 60 amperes, the current rating of the power cable assembly connected to the power source.

b. Connection to Generator Set. If a generator set is used to provide power to the AN/TRC-113, connect power to the assemblage as described in (1) and (2) below; otherwise, connect power as described in *c* below.

(1) Remove the cover from the POWER 115V AC IN receptacle in the power entrance box (fig. 1-13), and from the connector on one end of the power cable assembly. Connect the power cable assembly to the POWER 115V AC IN receptacle.

NOTE

As an expedient, the POWER 115V AC OUT receptacle may be used to make the connection if the POWER 115V AC IN receptacle is broken.

(2) If the generator set includes an output connector that is compatible with the connector on the power cable assembly, connect the power cable assembly to the generator set; otherwise, refer to the generator set manual and connect the power cable stub red or green lead and the white lead to terminal L1 and the black lead to the other terminal (L2). Connect a wire of at least #6 AWG between L1 and ground post on generator. Connect the power cable stub to the power cable assembly.

c. Connection to Central Power Source.

(1) Turn off, or disconnect, the central power source before making any connections.

(2) If the power source is a 120-volt, 50- to 60-hertz (Hz), single-phase, two-wire source, connect the power cable stub red or green lead to the ground terminal, the white lead to the neutral terminal, and the black lead to the hot (phase) terminal.

(3) If the power source is a 110- to 220-volt, 50- to 60-Hz, single-phase or two-phase, three-wire distribution system, connect the power cable stub red or green lead and the white lead to the neutral terminal, and the black lead to either of the two hot (phase) terminals.

(4) If the power source is a 110- to 220-volt, 50- to 60-Hz, three-phase, four-wire distribution system, connect the power cable stub red or green lead and the white lead to the neutral bus bar, and the black lead to either of the three hot (phase) bus bars.

(5) Connect the power cable stub to one end of the power cable assembly. Connect the other end of the power cable assembly to the POWER 115V AC IN receptacle in the power entrance box (fig. 1-13) on the assemblage.

(6) Position the hood shield on each side of the power entrance box in the open position, disconnect the cover support from the cover and lower the cover to the hood shields and secure the cover in position.

2-6. Signal Connections

a. Video Cable Connections (figs. 1-14 and 1-15). The video cable connections are determined by the system requirements. The video cable connections must be made to each pair of video connectors in both video and antenna entrance boxes (figs. 1-1 and 1-2). The video connectors designated SYSTEM 1 connect to the TD-204/U or TD-754/G in the SYSTEM 1 rack, and the video connectors designated SYSTEM 2 and SYSTEM 3 connect to the TD-204/U or TD-754/G in the SYSTEM 2 and SYSTEM 3 racks, respectively. Connect the video cable connections to the paired connectors in the video and antenna entrance boxes as determined by the system requirements.

NOTE

If a CX-11230/G cable is used instead of a CX-4245/G cable, Adapter, Cable Assembly CX-10734/G is required for connecting between the CX-11230/G cable and the SYSTEM connectors on the video and antenna entrance boxes.

b. Antenna Cable Connections (figs. 1-14 and 1-15). The antenna connections are determined by the system requirements. The antenna connector designated SYSTEM 1, SYSTEM 2, and SYSTEM 3 connect to the AN/GRC-103(V)'s in SYSTEM 1, SYSTEM 2 and SYSTEM 3 racks, respectively. Connect the antenna cables to the antenna connectors in the video and antenna entrance boxes as determined by the system requirements.

c. *Local Communication Connections* (fig. 1-13). The LS-147C/FI and the TA-312/PT provide local communication facilities for the AN/TRC-113. The PHONE binding posts in the power entrance box connect to the TA-312/PT and the INTERCOM binding posts to the LS-147C/FI. Connect the local communication facility as required for the application.

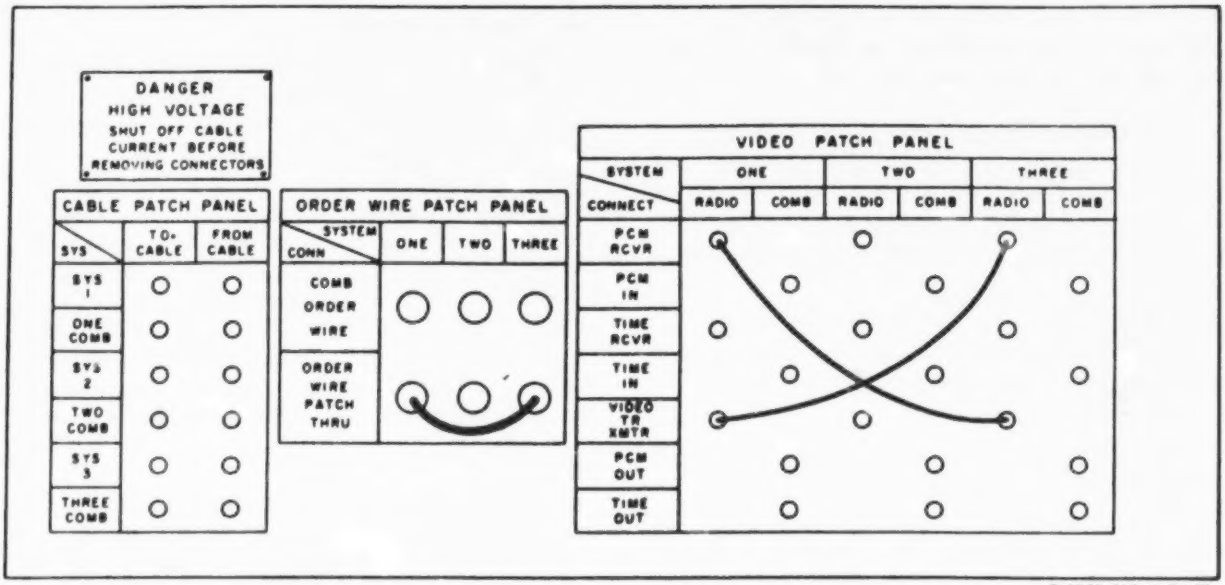
2-7. Interunit Cable Connections

The AN/TRC-113 may be arranged to provide cable or radio repeater facilities, or cable-to-radio conversion facilities. Determine the application requirement and make the appropriate PATCH PANEL connections as indicated in the chart below.

NOTE

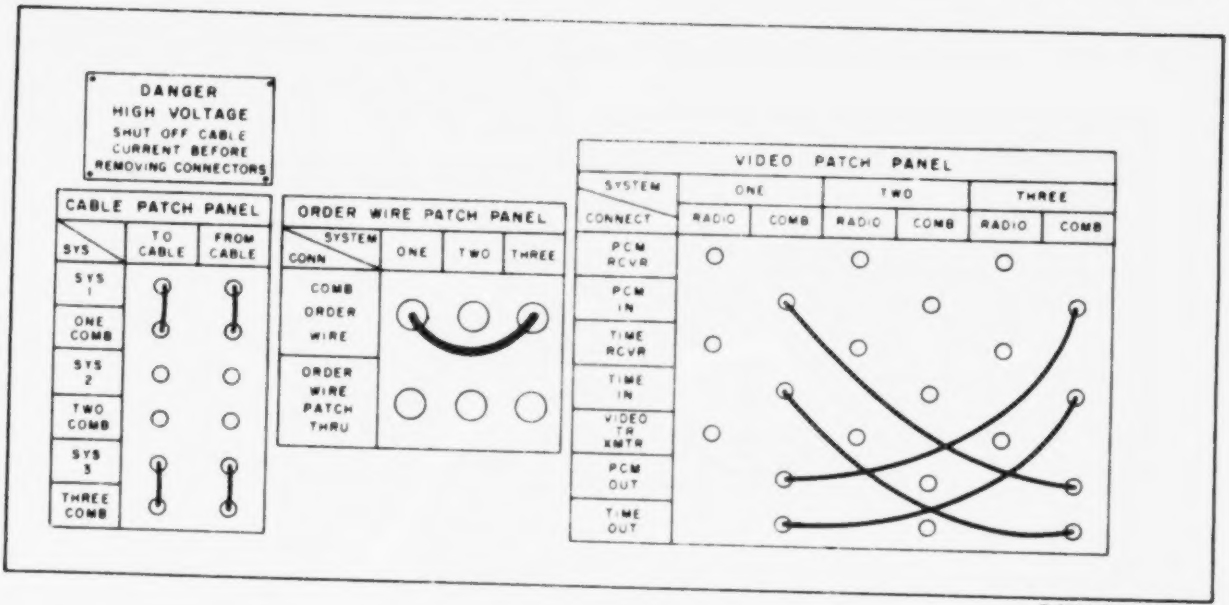
The connections below are typical and do not represent the complete utilization of all equipments in the AN/TRC-113.

Application requirement	Interunit connection figure
6 12-channel radio repeater	2-18
12 24 48-channel cable repeater	2-19
12-channel cable-to-radio conversion	2-20
6 12-channel radio repeater and 12-channel cable-to-radio conversion	2-21
12 24 48-channel cable repeater and 12-channel cable-to-radio conversion	2-22


DANGER
HIGH VOLTAGE
SHUT OFF CABLE
CURRENT BEFORE
REMOVING CONNECTORS
CABLE PATCH PANEL
SYS
TO CABLE
FROM CABLE
SYS 1
ONE COMB
SYS 2
TWO COMB
SYS 3
THREE COMB
ORDER WIRE PATCH PANEL
SYSTEM
CONN
ONE
TWO
THREE
COMB ORDER WIRE
ORDER WIRE PATCH THRU
VIDEO PATCH PANEL
SYSTEM
CONNECT
ONE
TWO
THREE
RADIO
COMB
RADIO
COMB
RADIO
COMB
PCM RCVR
PCM IN
TIME RCVR
TIME IN
VIDEO TR XMTR
PCM OUT
TIME OUT

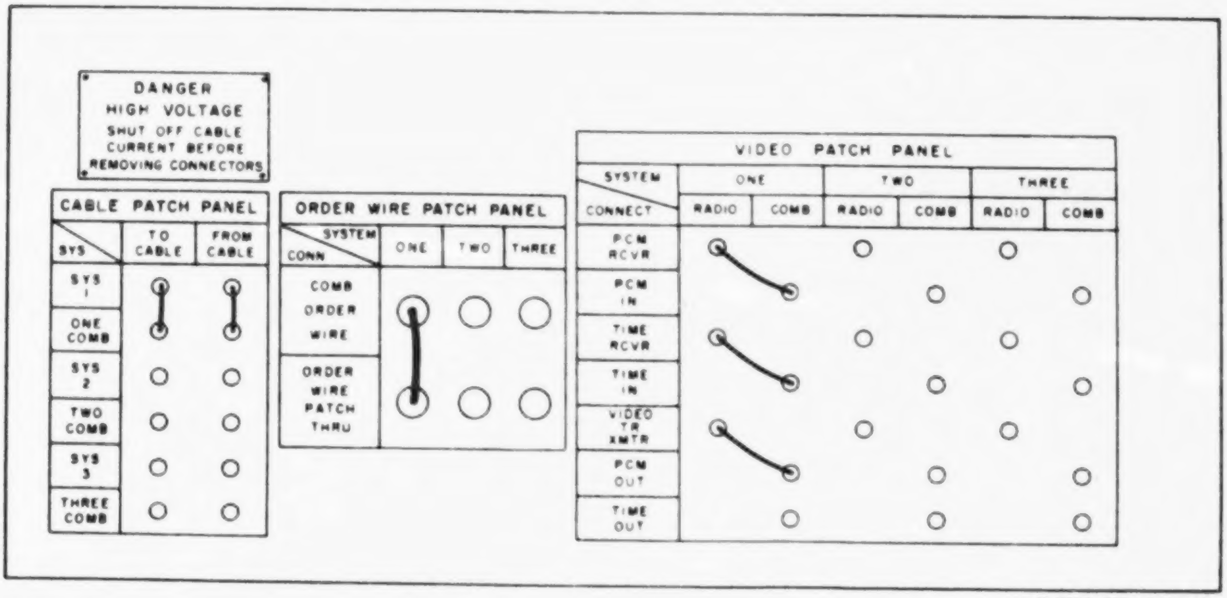
EL5820-562-14-TM-33

Figure 2-18. Patch panel connections for 6/12-channel radio repeater, utilizing system 1 and 3 rack equipment.


DANGER
HIGH VOLTAGE
SHUT OFF CABLE
CURRENT BEFORE
REMOVING CONNECTORS
CABLE PATCH PANEL
SYS
TO CABLE
FROM CABLE
SYS 1
ONE COMB
SYS 2
TWO COMB
SYS 3
THREE COMB
ORDER WIRE PATCH PANEL
SYSTEM
CONN
ONE
TWO
THREE
COMB ORDER WIRE
ORDER WIRE PATCH THRU
VIDEO PATCH PANEL
SYSTEM
CONNECT
ONE
TWO
THREE
RADIO
COMB
PCM RCVR
PCM IN
TIME RCVR
TIME IN
VIDEO TR XMTR
PCM OUT
TIME OUT

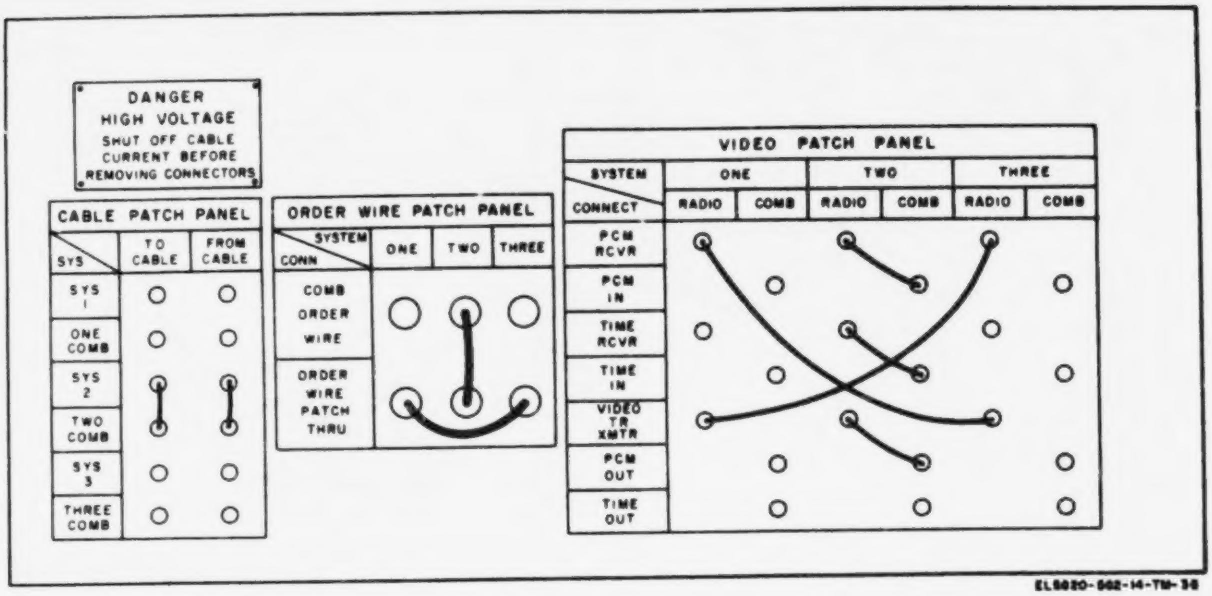
EL5820-562-14-TM-34

Figure 2-19. Patch panel connections for 12 / 24 / 48-channel cable repeater, utilizing system 1 and 3 rack equipment.


DANGER
HIGH VOLTAGE
SHUT OFF CABLE
CURRENT BEFORE
REMOVING CONNECTORS
CABLE PATCH PANEL
SYS
TO CABLE
FROM CABLE
SYS 1
ONE COMB
SYS 2
TWO COMB
SYS 3
THREE COMB
ORDER WIRE PATCH PANEL
SYSTEM
CONN
ONE
TWO
THREE
COMB ORDER WIRE
ORDER WIRE PATCH THRU
VIDEO PATCH PANEL
SYSTEM
CONNECT
ONE
TWO
THREE
RADIO
COMB
PCM RCVR
PCM IN
TIME RCVR
TIME IN
VIDEO TR XMTR
PCM OUT
TIME OUT

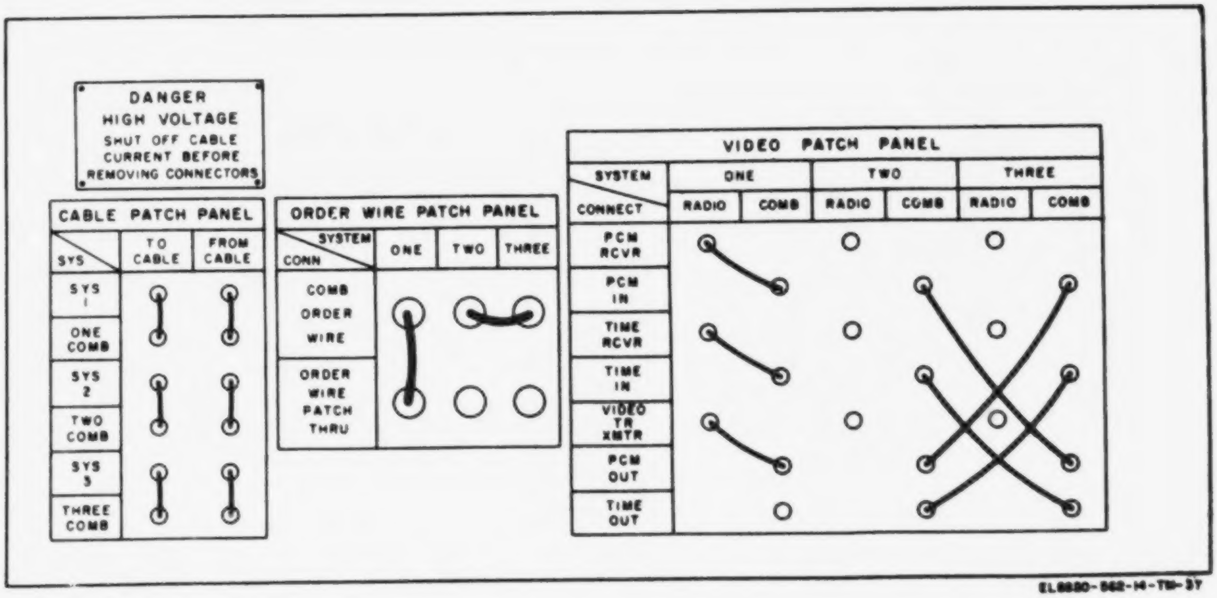
EL5820-562-14-TM-38

Figure 2-20. Patch panel connections for 12-channel cable-to-radio conversion, utilizing system 1 rack equipment.


DANGER
HIGH VOLTAGE
SHUT OFF CABLE
CURRENT BEFORE
REMOVING CONNECTORS
CABLE PATCH PANEL
SYS
TO CABLE
FROM CABLE
SYS 1
ONE COMB
SYS 2
TWO COMB
SYS 3
THREE COMB
ORDER WIRE PATCH PANEL
SYSTEM
CONN
ONE
TWO
THREE
COMB ORDER WIRE
ORDER WIRE PATCH THRU
VIDEO PATCH PANEL
SYSTEM
CONNECT
ONE
TWO
THREE
RADIO
COMB
PCM RCVR
PCM IN
TIME RCVR
TIME IN
VIDEO TR XMTR
PCM OUT
TIME OUT

EL5820-562-14-TM-36

Figure 2-21. Patch panel connections for 6 / 12-channel radio repeater, utilizing system 1 and 3 rack equipment and 12 channel cable-to-radio conversion utilizing system 2 rack equipment.


DANGER
HIGH VOLTAGE
SHUT OFF CABLE
CURRENT BEFORE
REMOVING CONNECTORS
CABLE PATCH PANEL
SYS
TO CABLE
FROM CABLE
SYS 1
ONE COMB
SYS 2
TWO COMB
SYS 3
THREE COMB
ORDER WIRE PATCH PANEL
SYSTEM
CONN
ONE
TWO
THREE
COMB ORDER WIRE
ORDER WIRE PATCH THRU
VIDEO PATCH PANEL
SYSTEM
CONNECT
ONE
TWO
THREE
RADIO
COMB
PCM RCVR
PCM IN
TIME RCVR
TIME IN
VIDEO TR XMTR
PCM OUT
TIME OUT

EL5820-562-14-TM-37

Figure 2-22. Patch panel connections for 12-channel cable-to-radio conversion, utilizing system 1 rack equipment and 12 / 24 / 48-channel cable repeater, utilizing system 2 and 3 rack equipment.

2-8. Deleted.

Figure 2-23. **Deleted**

Figure 2-24. **Deleted**

2-9. Preliminary Checks and Adjustments

a. Assemblage Power and Lighting.

(1) Check to see that all the circuit breakers on the power distribution panel and the equipment racks are operated to OFF.

(2) Energize the ac circuits in the assemblage and turn on the lights, following the procedures given in paragraph 3-2. Check to see that all assemblage lights, blowers, and heaters operate properly.

b. TA-312 / PT.

(1) Install two Batteries BA-30 in the battery case of the TA-312 / PT, one facing up and one facing down.

(2) Operate the CB-LB-CBS switch to LB.

(3) Check to see that the wire pair adjacent to the TA-312 / PT is connected to the binding posts on the TA-312 / PT.

c. LS-147C / FI.

(1) Check to see that the wire pair adjacent to

the LS-147C / FI is connected to the terminals at the rear of the unit.

(2) Connect the ac power cord of the LS-147C / FI to the INTERCOM receptacle.

d. Equipment or Heater Power.

(1) Operate the EQUIP circuit breaker of the POWER DISTRIBUTION PANEL to ON (fig. 3-1).

(2) If the interior of the assemblage is extremely cold and two heaters are required for initial heating, operate the EQUIPMENT-HEATER switch of the power distribution panel to HEATER; then operate the heaters (para 3-3) to establish the required heat.

(3) When the desired interior temperature is obtained, or if the two heaters are no longer required, operate the EQUIPMENT-HEATER switch of the power distribution panel to EQUIPMENT.

e. TD-204 / U. Perform the following procedures on each TD-204 / U connected in an operating system. If a TD-204 / U is not connected in a system, perform the procedures given in (1) through (6), (8), and (12) through (14) below.

(1) Operate the AC POWER, CABLE POWER, and TALK-OFF-SIG switches to OFF.

(2) Depress the PUSH TO RELEASE CHASSIS button and slide the TD-204 / U out of its case far enough to expose the service facility panel and panel 6A4.

(3) Operate the TRAFFIC SEL switch to 12 for 12-channel cable-to-radio applications, or to 48AR for 12 / 24 / 48-channel cable repeater applications.

(4) Operate the NORM OPR-ZERO SET-READ switch to NORM OPR.

(5) Operate both MILES switches to 0.

(6) Operate the TONE-OFF switch on panel 6A2 to OFF.

(7) Operate the MILE switches on panels 6A4 and 6A5 to the position corresponding to the distance to the first TD-206 / G in the transmission cable.

NOTE

Both MILE switches (on panel 6A4 and panel 6A5) in a TD-204 / U must be at the same position at any given time when one or more TD-206 / G's are used in the cable link. If two TD-204 / U's are connected with 1 mile or less of transmission cable, operate the panel 6A4 MILE switches on both TD-204 / U's to the position corresponding to the transmission cable length (¼, ½, ¾, or 1 mile) and the panel 6A5 MILE switches on the TD-204 / U's to the 1-mile position.

(8) Operate the AC POWER switch to ON. Check to see that the AC POWER and ALARMS NO CABLE CURRENT indicators light and the buzzer sounds. Silence the buzzer with the ALARMS BUZZER OFF switch.

NOTE

If the buzzer sounds during the procedures given in (9) through (14) below, press the ALARMS BUZZER OFF switch to silence it.

(9) Operate the CABLE POWER switch to ON. Check to see that the ALARMS NO CABLE CURRENT indicator is extinguished.

(10) Operate the METER SELECT switch to CABLE I, and check for a yellow area indication on the TEST ALIGN meter.

(11) Operate the METER SELECT switch to CABLE V, and check to see that the TEST ALIGN meter indicates 10.8 times the number of TD-206 / G's in the cable link, plus 13.

(12) Operate the METER SELECT switch to SERV FAC.

(13) Operate the SERV SEL switch through —10, +10, SUM ± 3, and BAL and check for a yellow area indication on the TEST ALIGN meter for each position.

(14) Operate the SERV SEL switch to RCC, and check for a green area indication on the TEST ALIGN meter.

f. TD-754 / G. Perform the following procedures on each TD-754 / G connected in an operating system. If a TD-754 / G is not connected in a system, perform the procedures given in (1) through (7), (9), and (13) and (14) below.

(1) Operate the PWR, CABLE CURRENT, and TALK-OFF switches to OFF.

(2) Operate the MODE switch to 6 / 12 for 6- or 12-channel cable to radio applications, or to 24 or 48AR for 24- or 48-channel cable repeater applications.

(3) Operate the READ-ZERO SET-NORM OPR switch to NORM OPR.

(4) Operate the METER SEL switch to SERV FAC.

(5) Operate the SERV SEL switch to REF.

(6) Operate both FAULT LOC MILES switches to 0.

(7) Operate the TONE switch (screwdriver adjustment access through front panel) to OFF.

(8) Operate the CABLE MILES switches on panels 12A4 and 12A3 (access through front panel) to the position corresponding to the distance to the first TD-206 / G in the transmission cable.

NOTE

Both CABLE MILES switches on panels 12A4 and 12A5 must be at the same position at any given time when one or more TD-206/G's are used in the cable link. If two TD-754/G's (or a TD-204/U and TD-754/G) are connected with 1 mile or less of transmission cable, operate the panel 12A4 CABLE MILES switch to the position corresponding to the transmission cable length (¼, ½, ¾, or 1) and the panel 12A5 CABLE MILES switch to 1.

(9) Operate the PWR switch to ON. Check to see that the associated power indicator and CABLE CUR indicators light and the buzzer sounds. Silence the buzzer with the BUZZER OFF switch.

(10) Check to see that the TEST ALIGN meter shows a yellow band indication.

(11) Operate the CABLE CURRENT switch to ON and check that the CABLE CUR indicator extinguishes.

(12) Operate the METER SEL switch to CABLE CUR and check that the TEST ALIGN meter shows a green band indication.

(13) Operate the METER SEL switch to SERV FAC and the SERV SEL switch to REF. Check that the TEST ALIGN meter shows a green band indication.

(14) Operate the SERV SEL switch through +28, +12, +5, and —6 and check for a green area indication on the TEST ALIGN meter for each position.

(15) Operate the SERV SEL switch to RCC and check for a green area indication on the TEST ALIGN meter.

g. AN/GRC-103(V).

(1) Operate the T-983(P)/GRC-103(V) and R-1329(P)/GRC-103(V) AC POWER switches to OFF.

(2) Operate the RCVR CHANNEL and RCVR SIG controls of the receiver head to the assigned receiver channel and the XMTR DUPL control to the assigned transmitter channel.

(3) Operate the XMTR CHANNEL and XMTR TUNE controls on the transmitter head to the assigned transmitter channel.

(4) Operate the R-1329(P)/GRC-103(V) meter selector switch to OW and the T-983(P)/GRC-103(V) meter selector switch to OSC.

2-10. System Lineup.

The lineup procedures for the AN/TRC-113 consist of order wire alignment in the TD-204/U or TD-754/G and the AN/GRC-103(V), and antenna directional adjustment in the radio link. Perform the procedures in paragraph 3-2 and the procedures in *a* and/or *b* below.

a. TD-204/U. Perform the procedures on the TD-204/U's at both ends of a cable link, at the same time as follows:

(1) Connect Headset Microphone H-91/U to the HEADSET receptacle.

(2) Operate the TD-204/U AC POWER switch to ON and check to see that the AC POWER indicator lights. The ALARMS NO CABLE CURRENT indicator should light, and the buzzer should sound. Operate the CABLE POWER switch to ON, and silence the buzzer with the BUZZER OFF switch.

(3) Momentarily operate the TD-204/U TALK-OFF-SIG switch to SIG, and then to TALK.

(4) After communication is established through the link, operate the METER SELECT switch to SERV FAC and the SERV SEL switch to Q.

(5) Operate the TONE-OFF switch on panel 6A2 to TONE.

(6) Instruct the distant operator to adjust the CRL control on panel 6A2 of the distant TD-204/U for a center hairline indication on the TEST ALIGN meter.

(7) Operate the TONE-OFF switch to OFF, and request the distant operator to send the tone (distant TD-204/U TONE-OFF switch at TONE).

(8) Adjust the CRL control on panel 6A2 for a center hairline indication on the TEST ALIGN meter.

(9) Instruct the distant operator to stop the test tone. Check communications with the distant operator for proper volume.

(10) If the AN/TRC-113 is not to be put to immediate use, perform the stopping procedures in paragraph 3-8.

b. TD-754/G. Perform the procedures on the TD-754/G's at each end of a cable link at the same time as follows:

(1) Connect Headset Microphone H-156/U to the HEADSET receptacle.

(2) Operate the PWR switch to ON and check to see that the associated power indicator lights. The CABLE CUR indicator should light and the buzzer should sound. Operate the CABLE CURRENT switch to ON and silence the buzzer with the BUZZER OFF switch.

(3) Operate the METER SEL switch to SERV FAC and the SERV SEL switch to 0.

(4) Momentarily operate the TALK-OFF-SIG switch to SIG and then to TALK.

(5) After communication is established through the link, request the distant operator to operate the panel 12A2 TONE switch to ON.

(6) When the tone is received, adjust the panel 12A2 CRL control for a green band indication on the TEST ALIGN meter.

(7) Request the distant operator to operate the panel 12A2 TONE switch to OFF, operate the panel 12A2 TONE switch to ON, and instruct the distant operator to adjust the CRL control for a green band indication on the TEST ALIGN meter.

(8) When the adjustment is complete, operate the panel 12A2 TONE switch to OFF and check communications with the distant operator for proper volume.

(9) If the AN / TRC-113 is not to be put to immediate use, perform the stopping procedures in paragraph 3-8.

c. AN / GRC-103(V). Perform the following procedures at both ends of the radio link.

(1) Turn on and tune the AN / GRC-103(V) (para 3-3).

(2) Open the front of the RT-773 / GRC-103(V) and take out the H-60 / PT.

(3) Press the RING switch on the RT-773 / GRC-103(V) for about 2 seconds and attempt to establish order wire communications with the distant operator.

(4) Operate the hand switch of the H-60 / PT to converse with the distant operator.

(5) Request an order wire ring from the distant operator to check the order wire signaling.

(6) Operate the meter selector switch of the R-1329 / GRC-103(V) to RCVR SIG.

(7) Release the azimuth lock turnscrew on the antenna base plate.

(8) Use the strap wrench and rotate the mast to obtain a maximum indication on the receiver meter.

(9) Tighten the azimuth lock on the antenna base plate.

(10) If the AN / TRC-113 is not to be put to immediate use, perform the stopping procedures in paragraph 3-8.

CHAPTER 3
OPERATION

3-1. Controls and Indicators

Except for the controls and indicators listed in *a* and *b* below, all controls and indicators for the components of the AN/TRC-113 are covered in the appropriate technical manual (app. A).

a. Power Distribution Panel (fig. 3-1).

Control	Description	Function
MAIN circuit breaker	50 amperes	Provides overload protection, and control of ac power to tributary circuit breakers.
Circuit breakers (tributary):		Controls following circuits:
LIGHTS	15 amperes	Ceiling lights (fluorescent and incandescent).
BLOWERS	15 amperes	BLOWER 1 and BLOWER 2 receptacles.
HTR-1 CONV	Dual 15 amperes	HEATER 1 and CONVENIENCE receptacles.
INTERCOM	15 amperes	INTERCOM receptacle.
SPARE	20 amperes	Spare.
EQUIP	20 amperes	Controls ac power to EQUIPMENT-HEATER switch.
AC VOLTS meter	0-150 volts ac	Indicates input voltage.
AMPERES AC	0-100 amperes	Indicates total current drain in assemblage.
Indicators Nos. 1 through 7	NE-45	Glows when associated circuit breaker is operated to ON.
EQUIPMENT-HEATER switch	Two-position	EQUIPMENT position—applies ac power to equipment racks. HEATER position—applies ac power to HEATER 2 receptacle.
EQUIPMENT and HEATER indicators.	NE-45	Glows when EQUIPMENT-HEATER switch is in associated position.

b. Miscellaneous Controls and Indicators (fig. FO-2).

Control	Description	Function
POWER INDICATOR neon light	NE-34	Glows when ac power is applied to power entrance box.
FLUORESCENT LIGHTS switch	Two-position	Controls fluorescent ceiling lights.
INCANDESCENT COLD-START LIGHTS switch.	Two-position	Controls incandescent ceiling lights.
BYPASS BLACKOUT switch	Two-position	Controls lights assemblage as follows: ON position—permits assemblage light circuits to be controlled by interlock switch. OFF position—permits assemblage light circuits to be controlled by interlock switch.
BLOWER 1 switch	Two-position	Controls as power to BLOWER 1 receptacle.
BLOWER 2 switch	Two-position	Controls ac power to BLOWER 2 receptacle.
Interlock switch	Microswitch	Extinguishes assemblage lights when assemblage door is open and BYPASS BLACKOUT switch is at OFF.
CONV BREAKER circuit breaker in power entrance box (fig. 1-13).	20-ampere	Controls ac power to 115V AC receptacales in POWER ENTRANCE BOX.

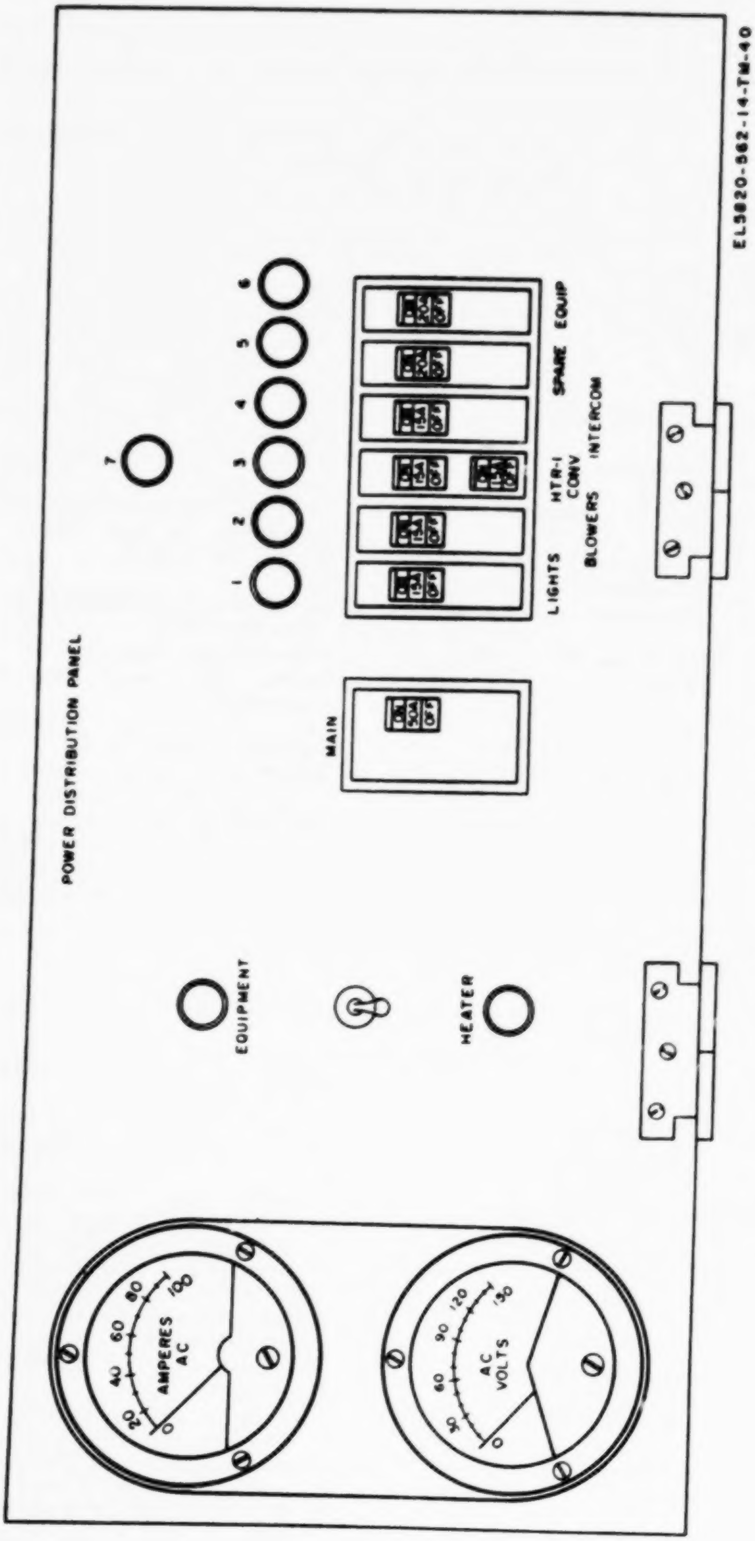

POWER DISTRIBUTION PANEL
7
1
2
3
4
5
6
MAIN
ON
50A
OFF
ON
15A
OFF
LIGHTS
BLOWERS
HTR-1
CONV
INTERCOM
SPARE
EQUIP
EQUIPMENT
HEATER
AMPERES
AC
0
20
40
60
80
100
AC
VOLTS
0
30
60
90
120
150
EL5820-562-14-TM-40

Figure 3-1. Power distribution panel.

3-2. Energizing Ac Circuits

a. If a generator set is used to supply power, start the generator; if a central power source is used, turn on the power. The POWER INDICATOR neon light at the rear roadside entrance wall will light (fig. 1-10) and the AC VOLTS meter on the power distribution panel (fig. 3-1) should indicate 115 volts±6 .

b. Operate the MAIN circuit breaker on the power distribution panel to ON.

c. Operate the LIGHTS circuit breaker on the power distribution panel to ON.

d. Operate the FLUORESCENT LIGHTS switch on the rear roadside entrance wall (fig. 1-10) to ON to operate the fluorescent ceiling lights. The AMPERES AC meter on the power distribution panel should have a small indication.

NOTE

If temperature in the assemblage is too low for the fluorescent ceiling lights to operate, operate the INCANDESCENT COLD-START LIGHTS switch to ON to operate the incandescent ceiling lights. When the assemblage is heated sufficiently for the fluorescent lights to operate, operate the INCANDESCENT COLD-START LIGHTS switch to OFF.

e. If blackout conditions are required, operate the BYPASS-BLACKOUT switch to OFF; otherwise, operate it to ON.

f. Check to see that the AMPERES AC meter on the power distribution panel indicates less than 2 amperes.

3-3. Operating Heaters, Blowers, LS-147C / FI and TA-312 / PT

a. Electric Heater No. 1.

(1) Insert the heater power connector into the HEATER 1 receptacle.

(2) Operate the HTR-1 CONV circuit breaker on the power distribution panel to ON; the associated neon indicator will light.

(3) Operate the heater switch to ON, and adjust the TEMPERATURE control on the heater for the desired temperature.

b. Electric Heater No. 2.

(1) Insert the heater power connector in the HEATER 2 receptacle.

(2) Operate the EQUIP circuit breaker on the power distribution panel to ON; the associated neon indicator will light.

(3) Operate the EQUIPMENT-HEATER switch on the power distribution panel to HEATER.

(4) Operate the heater switch to ON, and adjust the TEMPERATURE control on the heater for the desired temperature.

c. Exhaust Blowers.

(1) Open the EXHAUST BLOWER covers on the outside of the front wall of the assemblage (fig. 1-2).

(2) Open the air filter vent cover on the outside of the entrance door (fig. 1-1).

(3) Operate the BLOWERS circuit breaker on the power distribution panel to ON; the associated neon indicator will light.

(4) Operate the BLOWER 1 and BLOWER 2 switches on the ceiling power ducts (fig. FO-2) to ON; the blowers should operate.

d. Intercommunication Station LS-147C / FI (fig. FO-2).

(1) Operate the LS-147C / FI OFF-SEND switch to 5 (about midpoint); the glowlamp will light.

(2) Operate the PRESS TO TALK switch and speak into the speaker-microphone on the front panel. Release the PRESS TO TALK switch to listen.

NOTE

The OFF-SEND switch does not have to be turned on to receive a call.

(3) Adjust the RECEIVE control to regulate the volume of incoming calls.

e. Telephone Set TA-312 / PT.

(1) *Initiating a call.* Lift the handset from the cradle and turn the handcrank. Press the press-to-talk switch to talk, and release it to receive. Replace the handset in the cradle after the call is completed.

(2) *Answering a call.* When the TA-312 / PT rings, lift the handset from the cradle and listen to the receiver. Press the press-to-talk switch to talk. Replace the handset in the cradle after the call is completed.

3-4. Operating Rack Equipment

a. Power Distribution Panel. If heater No. 2 was in use for heating the interior of the assemblage, turn off the heater and operate the EQUIPMENT-HEATER switch to EQUIPMENT. If heater No. 2 was not used, operate the EQUIP circuit breaker to ON, and the EQUIPMENT-HEATER switch to EQUIPMENT.

b. TD-204 / U. Operate the TD-204 / U AC POWER switch to ON and check to see that the AC POWER indicator lights. The ALARMS NO CABLE CURRENT indicator should light, and the buzzer should sound. Operate the CABLE POWER switch to ON, and silence the buzzer with the BUZZER OFF switch.

c. TD-754 / G. Operate the PWR switch to ON and check to see that the associated power indicator lights. The CABLE CUR indicator should light and the buzzer should sound. Operate the CABLE

CURRENT switch to ON and silence the buzzer with the BUZZER OFF switch.

d. AN/GRC-103(V).

(1) See that the receiver head RCVR CHANNEL, RCVR SIG and XMTR DUPL controls are set for the proper channel numbers on both RCVR CHANNEL indicators and the XMTR CHANNEL indicator.

(2) See that the transmitter head XMTR CHANNEL and XMTR TUNE controls are set for the proper transmitter frequency.

(3) Operate the T-983(P)/GRC-103(V) AC POWER switch to ON/RESET. The AC POWER, ALARMS LOW POWER, and ALARMS SYNC indicators light, the buzzer sounds, and the blower operates.

(4) Operate the R-1329(P)/GRC-103(V) AC POWER switch to ON. The AC POWER indicator, ALARMS LOW SIGNAL, and ALARMS SYNC indicators light and the buzzer sounds. Press the BUZZER OFF switch to silence the buzzer. The POWER indicator on the RT-773/GRC-103(V) will also light, and a loud rushing noise will be heard in the H-60/PT of the RT-773/GRC-103(V).

(5) Operate the T-983(P)/GRC-103(V) meter selector switch to 12 VDC, 28 VDC, and 600 VDC sequentially. The meter should read in the green band.

(6) Operate the T-983(P)/GRC-103(V) meter selector switch to OSC, DOUBLER, and MULT sequentially. The meter should read between 25 and 90 percent of full scale.

(7) Operate the T-983(P)/GRC-103(V) meter selector switch to DRIVER (no adjustment for band II or band III), push in the PWR OUT PEAK knob, and tune for a maximum indication on the meter. The indication should be between 25 and 90 percent of full scale.

(8) Operate the T-983(P)/GRC-103(V) meter selector switch to PWR OUT (no adjustment for band III), pull out the PWR OUT PEAK knob, and tune for a maximum indication on the meter. The meter should indicate between 25 and 90 percent of full scale. If the buzzer sounds when the LOW POWER lamp extinguishes, press the BUZZER OFF pushbutton to silence the buzzer.

(9) Operate the T-983(P)/GRC-103(V) meter selector switch to REFL PWR and tune the R-1329(P)/GRC-103(V) XMTR DUPL control for a minimum indication on the T-983(P)/GRC-103(V) meter. The XMTR CHANNEL indicator should be within 10 channels of the assigned channel number and the meter should indicate less than 20 percent of full scale.

(10) Operate the R-1329(P)/GRC-103(V) meter selector switch to XMTR DUPL. The meter should indicate between 25 and 90 percent of full scale.

(11) Operate the R-1329(P)/GRC-103(V) meter selector switch to REFL PWR. The meter should indicate less than 20 percent of full scale.

(12) Operate the T-983(P)/GRC-103(V) meter selector switch to 12 CH PCM and adjust the INPUT control until the meter indicates in the green band.

(13) Operate the R-1329(P)/GRC-103(V) meter selector switch to +12 VDC and —12 VDC sequentially. The meter should indicate in the green band.

NOTE

The ALARMS SYNC indicator may light momentarily, or not at all. If it lights, wait until it extinguishes before proceeding.

(14) Operate the R-1329(P)/GRC-103(V) meter selector switch to OSC and DOUBLER sequentially. The meter should indicate between 25 and 90 percent of full scale.

(15) Operate the R-1329(P)/GRC-103(V) meter selector switch to MULT and adjust the MULT PEAK control for a maximum indication on the meter. The meter should read between 25 and 90 percent of full scale and the ALARMS LOW SIGNAL indicator will extinguish if a signal is being received. If the buzzer sounds, press the BUZZER OFF pushbutton to silence the buzzer.

(16) Wait until the ALARMS LOW SIGNAL indicator extinguishes. The loud rushing noise will cease in the H-60/PT.

(17) Operate the R-1329(P)/GRC-103(V) meter selector switch to RCVR SIG. The meter should indicate between 25 and 90 percent of full scale.

3-5. Order Wire Communication

a. TD-204/U of TD-754/G.

(1) *Initiating a call.*

(a) Operate the TD-204/U or TD-754/G TALK-OFF-SIG switch to talk.

(b) Listen to the H-91/U or H-156/U receiver to determine whether the order wire circuit is in use.

(c) If the circuit is not in use, operate the TALK-OFF-SIG switch to SIG for about 2 seconds.

NOTE

If identification codes are assigned to the terminal or repeater being called, operate the TALK-OFF-SIG switch between OFF and SIG corresponding to the identification code.

(d) Operate the TALK-OFF-SIG switch to TALK and converse with the distant operator.

(e) When the call is terminated, operate the TALK-OFF-SIG switch to OFF and replace the H-91/U or H-156/U in its mounting bracket.

(2) *Answering a call.*

(a) When the TD-204/U or TD-754/G CALL indicator lights, and the buzzer sounds, operate the TALK-OFF-SIG switch to TALK and answer the call.

NOTE

If identification codes have been assigned, answer only those calls corresponding to the assigned identification code.

(b) When the call is terminated, operate the TALK-OFF-SIG switch of OFF, and replace the H-91/U or H-156/U in its mounting bracket.

b. AN/GRC-103(V).

(1) *Initiating a call.*

(a) Listen to the H-60/PT receiver to determine whether the order wire circuit is in use.

(b) If the circuit is not in use, depress the RT-773/GRC-103(V) RING pushbutton for about 2 seconds.

NOTE

If identification codes are assigned to the terminal or repeater being called, depress the RING pushbutton corresponding to the identification code.

(c) Depress the hand switch of the H-60/PT to converse with the distant operator.

(d) When the call is terminated, replace the H-60/PT in the RT-773/GRC-103(V).

(2) *Answering a call.*

(a) When the RT-773/GRC-103(V) CALL indicator lights and the buzzer sounds, depress the hand switch of the H-60/PT to answer the call.

NOTE

If identification codes have been assigned, answer only those calls corresponding to the assigned identification code.

(b) When the call is terminated, replace the H-60/PT in the RT-773/GRC-103(V).

3-6. Operation Under Unusual Conditions

The AN/TRC-113 is fully insulated and weatherproofed for operation in hot, cold, or moderate climates. The shelter facility provides complete protection from the elements for personnel and equipment; however, under extreme conditions, the following precautions are necessary.

a. Cold Climates. Extreme cold causes cables and wires to become hard, brittle, and difficult to handle. Be careful when handling the cables and connecting them to the assemblage so that kinks and unnecessary loops will not result in permanent damage. Make sure that the binding posts and the connectors in the entrance boxes are free of frost, snow, and ice. Replace the covers on the receptacles, and close the entrance box covers when they are not in use. Open the hood shields and lower the covers when the entrance boxes are open. Replace the connector cover as soon as a cable is disconnected. Never drag or place an open connector in the snow.

b. Hot Climates. In hot, dry climates, connectors, receptacles, and binding posts are subject to damage from dust and dirt. Replace the covers on the connectors and the receptacles, and close the covers on entrance boxes when the entrance boxes are open. Never place an open connector on the ground.

c. Warm, Damp Climates. In warm, damp climates, the equipment is subject to damage from moisture and fungi. Wipe all moisture and fungi from the equipment with a lint free cloth.

3-7. Stopping Procedures

a. TD-204/U.

(1) Operate the TD-204/U CABLE POWER switch to OFF. The ALARMS NO CABLE CURRENT indicator will light and the buzzer will sound.

(2) Operate the TD-204/U AC POWER switch to OFF.

b. TD-754/G.

(1) Operate the CABLE CURRENT switch to OFF. Observe that the CABLE CUR indicator is lighted.

(2) Operate the PWR switch to OFF. Observe that the power indicator and the CABLE CUR indicator extinguish.

*c. AN/GRC-103(V).*Operate the AC POWER switches of the T-983(P)/GRC-103(V) and the R-1329(P)/GRC-103(V) to OFF.

CAUTION

If the equipment is turned off by using the emergency stopping procedure, operate all circuit breakers and equipment power switches to OFF before attempting to restart it to avoid excessive initial current drain on the power source.

d. Emergency Stopping Procedure. To turn the equipment off in an emergency, operate the MAIN circuit breaker on the power distribution panel to OFF.

CHAPTER 4

MAINTENANCE

Section 1. OPERATOR/CREW AND ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND SYSTEM READINESS CRITERIA

4-1. GENERAL.

a. Maintenance Forms and Records. The forms and records you fill out have several uses, including: (1) a permanent record of the services, repairs, and modifications made on your equipment; (2) reports to the next level of maintenance and to your commander; and (3) a checklist for you when you want to know the status of the equipment after its last use, and whether faults, if any, have been fixed. For information on forms and records, see DA PAM 738-750 (if USMC, see TM-4700-15/1d).

b. Routine Checks. Routine checks, such as cleaning, dusting, washing, stowing items not in use, covering unused receptacles, and checking for damage, are not listed as PMCS checks. They are things you should do any time you see they must be done. Ensure that all discrepancies are noted and corrected.

c. Operator PMCS. Operator's PMCS are the required periodic inspections and actions necessary to keep your equipment in good operating condition.

d. Organizational PMCS. Organizational preventive maintenance procedures are designed to help maintain equipment in serviceable condition. They include what items should be checked and how to check them. These checks and services are described in paragraph 4-3, outline inspections that are to be made at specific (W) weekly, (M) monthly, (Q) quarterly, (S) semiannually and (A) annual intervals.

e. System Readiness Criteria. System Readiness Criteria are those standard, specific requirements your system must meet for it to be mission-capable.

4-2. PMCS Table (paragraph 4-2.1). The PMCS table lists all the scheduled maintenance tasks required for your system.

a. Explanation of Columns.

(1) Item No. This column contains a number for each procedure to be performed. When reporting malfunctions or failures on DA Form 2404, Equipment Inspection and Maintenance Worksheet, place this number in the "TM Item No." column.

(2) Interval. These columns tell you when to do a procedure. Each column that applies will contain an asterisk (*). Some procedures will have asterisks in more than one column.

(3) Item to be inspected/procedure. This column contains the name of the item to be inspected and tells how to perform the required checks and services on it. Carefully follow these instructions and perform them in the order listed.

(4) Equipment is not ready/available if: This column tells you the conditions which will cause the equipment to be classified as not ready (red) for readiness reporting.

NOTE

If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

b. Instructions.

(1) Do your before (B) preventive maintenance just before you operate your equipment. Pay attention to CAUTIONS and WARNINGS.

(2) Do your during (D) preventive maintenance while the equipment and/or its components systems are in operation.

(3) Do your after (A) preventive maintenance right after operating the equipment. Pay attention to the CAUTIONS and WARNINGS.

(4) Do your weekly (W) preventive maintenance once a week.

(5) Do your monthly (M) preventive maintenance once a month.

(6) If something doesn't work, troubleshoot it with the instructions in this manual and notify your supervisor.

(7) Always do your preventive maintenance in the same order.

(8) If anything goes wrong and you can't fix it, write it on your DA Form 2404, or applicable form. If you find something seriously wrong, report it to the next level of maintenance IMMEDIATELY.

WARNINGS

Never operate the generator or shelter until it has been properly grounded. Electrical defects in the load lines or equipment can cause DEATH by electrocution when contact is made with an ungrounded system.

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame, the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician.

Compressed air shall not be used for cleaning purposes except where reduced to less than 29 psi and then only with effective chip guarding and personnel protective equipment. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used. Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel.

4-2.1. Operator/Crew Preventive Maintenance Checks and Services

Item No.	Interval					Item to be inspected Procedure	Equipment is not ready/available if:
	B	D	A	W	M		
1						Truck (1) 1 1/4 Ton (M1009)	
						Follow PMCS procedures in TM 9-2300-295-15/29.	Truck is inoperative and no substitute is available.
2						Generator Set PU-625/G	
						Follow PMCS procedures in TM 5-6115-365-15.	Generators are inoperative and no substitute is available.
3						Grounding Rod MX-148/G	
	*			*		Check grounding system to see that it is properly installed. Tighten if necessary.	Unable to ground properly.
4						Antenna AS-1852/53/54	
	*					Check each guy for proper tension. Tighten if necessary.	Unable to ground properly.
5						Shelter Door Air Filter	
	*					Clean or replace as necessary.	
6						Shelter Blowers	
	*	*				Check for proper air flow.	Blowers fail to operate.
7						Heater, Electric	
	*	*				Check for proper heat output.	

4-2.1. Operator/Crew Preventive Maintenance Checks and Services (cont'd)

<table>
<tr><th rowspan="2">Item No.</th><th colspan="5">Interval</th><th rowspan="2">Item to be inspected
Procedure</th><th rowspan="2">Equipment is not ready/available if:</th></tr>
<tr><th>B</th><th>D</th><th>A</th><th>W</th><th>M</th></tr>
<tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td>Telephone Set TA-312/PT</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>*</td><td>Batteries-Inspect for foreign matter and corrosion -Clean as necessary.</td><td></td></tr>
<tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td>Intercommunication Station LS-147C/FI</td><td></td></tr>
<tr><td></td><td>*</td><td></td><td></td><td></td><td></td><td>Check to see that power cord is connected to equipment ground.</td><td></td></tr>
<tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td>Multiplexer TD-204</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>METER SELECT Switch</td><td></td></tr>
<tr><td></td><td></td><td>*</td><td></td><td></td><td></td><td>Operate switch to the following positions while observing TEST ALIGN meter for the proper indications:
<table>
<tr><th>Position</th><th>Indication</th></tr>
<tr><td>TIMING IN</td><td>Green band</td></tr>
<tr><td>PCM IN-1</td><td>Green band</td></tr>
<tr><td>PCM IN-2</td><td>Green band (24 channel only)</td></tr>
<tr><td>CABLE I</td><td>Yellow band</td></tr>
<tr><td>CABLE V</td><td>10.8 times No. TD-206/U plus 13.</td></tr>
</table>
NOTE
If CABLE V position is checked with loss of timing in signal, use 14.8 times No. of TD-206/U's plus 13.</td><td>Improper indication.
Improper indication.
Improper indication.
Improper indication.
Improper indication.</td></tr>
</table>

4-2.1. Operator/Crew Preventive Maintenance Checks and Services (cont'd)

Item No.	Interval					Item to be inspected Procedure			Equipment is not ready/available if:
	B	D	A	W	M				
11						Multiplexer TD-754/G			
						Monitor Circuit Checks			
		*				Operate METER SEL Switch to the following positions while observing TEST ALIGN meter for the proper indication:			
							Position	Indication	
							TIM IN	Green band	Improper indication.
							PCM IN-1	Green band	Improper indication.
							PCM IN-2	Green band (24 channel operation only)	Improper indication.
							CABLE CUR	Green band	Improper indication.
		*				With METER SEL Switch operated to SERV FAC, operate SERV SEL switch to the following positions while observing TEST ALIGN meter for the proper indications:			
							Position	Indication	
							REF	Yellow band	Improper indication.
							+28	Green band	Improper indication.
							+12	Green band	Improper indication.
							+5	Green band	Improper indication.
							-6	Green band	Improper indication.
							RCC	Green band	Improper indication.
							A	Green band	Improper indication.
							B	Green band (not applicable in 48-channel operation)	Improper indication.
							C	Green band	Improper indication.

4-2.1. Operator/Crew Preventive Maintenance Checks and Services (cont'd)

Item No.	Interval					Item to be inspected Procedure		Equipment is not ready/available if:
	B	D	A	W	M			
						Monitor Circuit Check (cont'd)		
						Position	Indication	
						D	Green band	Improper indication.
						E	Green band	Improper indication.
						F	Green band	Improper indication.
						G	Green band	Improper indication.
						H	Green band	Improper indication.
						J	Green band	Improper indication.
						K	Green band	Improper indication.
						L	Green band	Improper indication.
						M	In, or to right of, green band (see note 1)	Improper indication.
						N	In, or to right of, green band (see note 1)	Improper indication.
						O	Green band (see note 2)	Improper indication.
						NOTE 1. Operating TONE switch on panel 12A2 to ON should cause a normal indication on TEST ALIGN meter for switch positions M and N. 2. A call signal or test tone signal applied from TD-754/G on opposite end of cable link should cause a normal indication on TEST ALIGN meter for switch position O.		
12						Radio Set AN/GRC-103		
		*				Check air filter to see that it is clean. Clean as necessary.		

4-2.2. System Readiness Criteria table (table 4-2.3). The System Readiness Criteria table is your "checklist" for determining the mission readiness of your system.

a. Explanation of Columns.

(1) Item No. This column contains a number for each readiness-reportable item. When reporting, on DA Form 2404, Equipment Inspection and Maintenance Worksheet, malfunctions or failures that cannot be repaired "on-the-spot," place this number in the "TM Item No." column.

(2) Subsystems and Components. This column lists all system equipments which are required for readiness reporting.

(3) Equip Model ID #. This column contains the equipment model identification number (type-classification) of each equipment.

(4) Qty. This column tells you the quantity of equipment/items furnished as part of, or with, your system.

(5) Remarks. This column contains other information/special instructions and will alert you to any exceptions to the requirements, designed to give you maximum mission flexibility.

b. Instructions. Perform the following steps to determine system readiness:

(1) BEFORE starting your mission, ensure that listed equipments/items are on hand and operational. If necessary, perform operational checks in applicable TM's to determine the condition of your equipment.

(2) Take note of REMARKS column. This column contains exceptions and special instructions to help you tailor your requirements to your mission.

(3) If any required equipment/item is not on hand and operational, your entire system is deadlined (unless otherwise noted in the REMARKS column).

(4) Correct any discrepancies, then re-check all equipments/items on list. When all required equipment/items are on hand and operational, your system is mission-ready.

(5) AFTER completing your mission, and before moving to a new location, ensure that all listed equipments/items are on hand.

4-2.3. SYSTEM READINESS CRITERIA

System ratings: Fully Mission Capable (FMC)
Not Mission Capable (NMC)

Item No.	AN/TRC-113(*)(V)1-3 Subsystems and components	Equip Model ID #	Qty	REMARKS
1R	Shelter, Electrical Equipment Wired (with following components):	S-250	1	System may be rated FMC with component(s) rated NMC if that/those component(s) are not required to support the mission.
2R	Blower Assembly		2	
3R	Converter, Frequency	CV-2500	2	
4R	Dummy Load, Electrical	DA-437	2	System may be rated FMC if one DA-437 is rated NMC.
5R	Handset	H-156	2	
6R	Headset, Microphone	H-91/U	2	
7R	Heater, Electric		2	
8R	Intercommunication Station	LS-147C/FI	1	System may be rated FMC if LS-147C/FI is rated NMC.
9R	Multiplexer	TD-204/U or TD-754/G	3	System may be rated FMC if one multiplexer is rated NMC.
10R	Power Supply	PP-6917	2	System may be rated FMC if one PP-6917 is rated NMC.
11R	Radio Set	AN/GRC-103	3	System may be rated FMC if one AN/GRC-103 is rated NMC NMC.
12R	Telephone Set	TA-312/PT	1	System may be rated FMC if TA-312/PT is rated NMC.

4-2.3. SYSTEM READINESS CRITERIA (cont'd)

System ratings: Fully Mission Capable (FMC)
Not Mission Capable (NMC)

Item No.	AN/TRC-113(*)(V)1-3 Subsystems and components	Equip Model ID #	Qty	REMARKS
13R	Antenna Assembly NOTE The following components are required for EACH antenna assembly.		2	
14R	Antenna (consisting of):	AS-1852	1	
15R	Antenna Element	AS-2151	1	
16R	Reflector, Antenna	AS-2150	1	
	OR			
17R	Antenna (consisting of):	AS-1853	1	
18R	Antenna Element	AS-2194	1	
19R	Reflector, Antenna	AS-2150	1	
	OR			
20R	Antenna (consisting of):	AS-1854	1	
21R	Antenna Element	AS-2195	1	
22R	Reflector, Antenna	AS-2150	1	
23R	Cable Assembly, Power Electrical and Reel RC-435	CX-7453 A/U	1	
24R	Cable Assembly, Power Electrical	CX-7705 A/U	1	

Table 4-2.3. SYSTEM READINESS CRITERIA (cont'd)

System ratings: Fully Mission Capable (FMC)
Not Mission Capable (NMC)

Item No.	AN/TRC-113(*)(V)1-3 Subsystems and components	Equip Model ID #	Qty	REMARKS
25R	Cable Assembly, RF (50 FT)	CG-3443 /U	1	
26R	Cable Assembly, FT (18 IN)	CG-3444 /U	1	
27R	Connector, Adapter	UG-1375 /U	1	
28R	Generator Set	PU-625/G	1	System may be rated FMC if generator is rated NMC.
29R	Ground Rod	MX-148	2	
30R	Mast Assembly (consisting of):	AB-952	1	
31R	Elevator, Antenna	AB-1072	1	
32R	Mast Section	AB-1071	7	
33R	Mast Accessory Kit (consisting of):	MK-1069	1	
34R	Accessories Waterproof Bag		1	
35R	Guy Attachment Ring		1	
36R	Guy Stakes		3	
37R	Guy Wires		6	
38R	Reflector Attachment Assembly		1	
39R	Spikes		3	
40R	Strap wrench		1	
41R	Universal Tool		1	

Table 4-2.3. SYSTEM READINESS CRITERIA (cont'd)

System ratings: Fully Mission Capable (FMC)
Not Mission Capable (NMC)

Item No.	AN/TRC-113(*)(V)1-3 Subsystems and components	Equip Model ID #	Qty	REMARKS
42R	Mast Extension Kit (consisting of):	MK-1009	1	
43R	Adapter Connector	UG-1373 /U	1	
44R	Cable Assembly, RF (25 FT)	CG-3443 /U	1	
45R	Case, Mast Extension Kit	CY-6148	1	
46R	Guy Anchor		3	
47R	Guy Attachment Ring		1	
48R	Guy Wire (blue-coded)		3	
49R	Mast Section	AB-1071	3	
50R	Truck, 1 1/4 Ton	M-1009	1	System may be rated FMC if if appropriate substitute is available.

4-3. Organizational Preventive Maintenance Checks and Services

Item No.	Interval					Item to be inspected Procedure	Equipment is not ready/available if:
	B	D	A	W	M		
1						Grounding system integrity.	
					*	Check operation.	
2						Telephone Set TA-312/PT	
	*					Check operation.	
3						Radio link equipment	
	*					Check operation.	
4						Cable link equipment	
	*					Check operation.	

Section II. TROUBLESHOOTING

4-5. System Troubleshooting

a. General. System troubleshooting is based on symptoms that may occur at the AN/TRC-113 when it is connected as a cable repeater, a radio repeater, or a cable-to-radio conversion point. The trouble symptoms may be discovered through the built-in alarms in the equipment components (app. A), incorrect indications in preventive maintenance checks and services (paras 4-2 and 4-3), or from other terminals or repeaters in the system. When a trouble symptom occurs, refer to the appropriate troubleshooting chart (*b*, *c*, or *d* below) to find the possible trouble and corrective measure. Refer to the chart in *b* below if the AN/TRC-113 is operating as a cable repeater. Refer to the chart in *c* below if the AN/TRC-113 is operating as a radio repeater. Refer to the chart in *d* below if the AN/TRC-113 is operating as a cable-to-radio conversion point. The loopback checks (*e* below) may be used to verify isolation of troubles in the system.

b. Cable Repeater Troubleshooting Chart.

Item No	Symptom	Possible trouble	Corrective measure
1	ALARMS TRAFFIC indicator on TD-204/U or TRAFFIC indicator on TD-754/G lights, buzzer sounds, and order wire is normal.	*a.* Defective TD-206/G in cable link. *b.* Defective TD-204/U or TD-754/G. *c.* Defective pcm component at distant terminal or repeater.	*a.* Troubleshoot cable link (para 4-6). *b.* Troubleshoot TD-204/U or TD-754/G (para 4-7). *c.* Request distant terminal or repeater troubleshooting.
2	Distant terminal or repeater indicates loss of pcm. No indication on TEST ALIGN meter of local TD-204/U or TD-754/G with METER SELECT switch at TIMING IN. Other TD-204/U or TD-754/G has no alarms.	*a.* Defective CG-1040B/U cable between TD-204/U's or TD-754/G's and patch panel. *b.* Defective VIDEO PATCH PANEL cable. *c.* Other TD-204/U or TD-754/G defective (no timing out).	*a.* Check and replace if necessary. *b.* Check and replace if necessary. *c.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
3	Distant terminal indicates out of frame pcm. No indication on TEST ALIGN meter of local TD-204/U or TD-754/G with METER SELECT switch at PCM IN-1. Other TD-204/U or TD-754/G has no alarms.	*a.* Defective CG-1040B/U cable between TD-204/U's or TD-754/G's and patch cable. *b.* Defective VIDEO PATCH PANEL cable. *c.* Other TD-204/U or TD-754/G defective (no timing out).	*a.* Check and replace if necessary. *b.* Check and replace if necessary. *c.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
4	ALARMS TRAFFIC indicator of TD-204/U or TRAFFIC indicator of TD-754/G lights, buzzer sounds, and no order wire available.	*a.* Defective TD-206/G in cable link. *b.* Defective transmission cable in cable link. *c.* Defective TD-204/U or TD-754/G. *d.* Defective TD-204/U or TD-754/G at distant terminal or repeater.	*a.* Troubleshoot cable link (para 4-6). *b.* Troubleshoot cable link (para 4-6). *c.* Troubleshoot TD-204/U or TD-754/G (para 4-7). *d.* Keep TD-204/U or TD-754/G operating. Periodically try order wire and wait for response. Send man to distant terminal or repeater.
5	ALARMS TRAFFIC indicator and ALARMS NO CABLE CURRENT indicator of TD-204/U or TRAFFIC and CABLE CUR indicators of TD-754/G light and buzzer sounds. No order wire available.	Open transmission cable (both directions) in cable link.	Troubleshoot cable link (para 4-6).
6	ALARMS NO CABLE CURRENT indicator on TD-204/U or CABLE CUR indicator of TD-754/G lights and buzzer sounds. Order wire is normal.	*a.* Momentary overcurrent or undercurrent in cable link. *b.* Defective TD-204/U or TD-754/G.	*a.* Operate CABLE POWER switch to OFF and then to ON. *b.* Troubleshoot TD-204/U or TD-754/G (para 4-7).

Item No.	Symptom	Possible trouble	Corrective measure
7	ALARMS NO CABLE CURRENT indicator on TD-204/U or CABLE CUR indicator of TD-754/G lights. No order wire transmission.	*a.* Defective CG-1040B/U cable between TD-204/U or TD-754/G TO CABLE connector and TO CABLE connector on cable patch panel.	*a.* Check and replace if necessary.
		b. Defective cable between TO CABLE connector of CABLE connector of CABLE PATCH PANEL and OUT connector on video and antenna entrance box.	*b.* Check and replace if necessary.
		c. Defective patch cable between TO CABLE connectors on CABLE PATCH PANEL.	*c.* Check and replace if necessary.
		d. Open transmission cable (send side) in cable link.	*d.* Troubleshoot cable link (para 4-6).
8	Distant terminal or repeater indicates loss of pcm. All local indications are normal.	Defective TD-206/G in cable link.	Troubleshoot cable link (para 4-6).
9	Switchboard operator at distant terminal reports high noise level, but all local indications are normal.	Defective TD-204/U or TD-754/G.	Troubleshoot TD-204/U or TD-754/G (para 4-7).
10	Order wire garbled and noisy, but all other indications are normal.	Defective TD-204/U or TD-754/G.	Troubleshoot TD-204/U or TD-754/G (para 4-7).
11	Through order wire communications not available, but all other indications are normal.	*a.* Defective cable between TD-204/U PATCH THRU and COMB ORDER WIRE connector on ORDER wire patch PANEL.	*a.* Check and replace if necessary.
		b. Defective patch cable between COMB ORDER WIRE connectors on ORDER WIRE PATCH PANEL.	*b.* Check and replace if necessary.
12	Order wire not available, but all other indications are normal.	*a.* Defective associated TD-204/U or TD-754/G.	*a.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
		b. Defective distant TD-204/U or TD-754/G.	*b.* Request distant terminal or repeater troubleshooting.
13	Distant terminal indicates out of frame pcm and all local indications are normal.	*a.* Defective TD-206/G in cable link.	*a.* Troubleshoot cable link (para 4-6).
		b. Defective TD-204/U or TD-754/G.	*b.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
14	Incorrect indication on TEST ALIGN meter of TD-204/U or TD-754/G with METER SELECT switch at SERV FAC and SERV SEL switch at RCC.	Cable current adjustment required at distant terminal or repeater.	Request cable current adjustment at distant terminal or repeater.
15	Distant terminal or repeater request cable current adjustment. TEST ALIGN meter of local TD-204/U does not indicate in yellow area with METER SELECT switch at CABLE I. (CABLE CUR, and green area on TD-754/G).	Cable current adjustment required.	Adjust CABLE CURRENT ADJ control for a center hairline indication in yellow area of TEST ALIGN meter on TD-204/U, or green area on TD-754/G.
16	TEST ALIGN meter of TD-204/U or TD-754/G does not give correct indication with METER SELECT switch at CABLE V.	Shorted transmission cable in cable link.	Troubleshoot cable link (para 4-6).

c. Radio Repeater Troubleshooting Chart.

Item No.	Symptom	Possible trouble	Corrective measure
1	No indication on R-1329(P)/GRC-103(V) meter with meter selector switch at RCVR SIG, 12 CH PCM, or OW. High indication on T-983(P)/GRC-103(V) meter with meter selector switch at REFL PWR.	*a.* Defective cable between R-1329(P)/GRC-103(V) ANT connector and associated SYSTEM connector on video and antenna entrance box.	*a.* Check and replace if necessary.
		b. Defective antenna cable or antenna.	*b.* Check and replace if necessary.
		c. Defective R-1329(P)/GRC-103(V).	*c.* Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
		d. Defective antenna, antenna cable, or T-983(P)/GRC-103(V) at distant terminal or repeater.	*d.* Keep AN/GRC-103(V) operating; periodically try order wire. Send man to distant terminal or repeater.
2	No indication on R-1329(P)/GRC-103(V) meter with meter selector switch at 12 CH PCM. Associated T-983(P)/GRC-103(V) has no indication on meter with meter selector switch at 12 CH PCM. All other indications are normal.	*a.* Defective R-1329(P)/GRC-103(V).	*a.* Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
		b. Defective T-983(P)/GRC-103(V) at distant terminal or repeater.	*b.* Request distant terminal or repeater troubleshooting.
		c. Defective pcm component at distant terminal.	*c.* Request distant terminal troubleshooting.
3	No indication on T-983(P)/GRC-103(V) meter with meter selector switch at 12 CH PCM. All other indications are normal.	*a.* Defective CG-1040B/U cable between R-1329(P)/GRC-103(V) PCM RCVR connector of VIDEO PATCH PANEL.	*a.* Check and replace if necessary.
		b. Defective CG-1040B/U cable between T-983(P)/GRC-103(V) VIDEO connector and VIDEO TR XMTR connector of VIDEO PATCH PANEL.	*b.* Check and replace if necessary.
		c. Defective patch cable between PCM RCVR and VIDEO TR XMTR connector on VIDEO PATCH PANEL.	*c.* Check and replace if necessary.
		d. Defective T-983(P)/GRC-103(V).	*d.* Troubleshoot T-983(P)/GRC-103(V) (para 4-7).
		e. Defective R-1329(P)/GRC-103(V).	*e.* Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
4	No indication on R-1329(P)/GRC-103(V) meter with meter selector switch at OW. All other indications are normal except that no order wire signal is available.	*a.* Defective associated CX-10763/GRC-103(V) cable.	*a.* Check and replace if necessary.
		b. Defective associated RT-773/GRC-103(V).	*b.* Troubleshoot RT-773/GRC-103(V) (para 4-7).
5	Distant terminal or repeater indicates all indications are normal except for order wire reception.	*a.* Defective associated CX-10763/GRC-103(V) cable.	*a.* Check and replace if necessary.
		b. Defective T-983(P)/GRC-103(V).	*b.* Troubleshoot T-983(P)/GRC-103(V) (para 4-7).
6	All indications normal except for order wire reception.	*a.* Defective CX-10763/GRC-103(V).	*a.* Check and replace if necessary.
		b. Defective R-1329(P)/GRC-103(V).	*b.* Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
		c. Defective T-983(P)/GRC-103(V) at distant terminal or repeater.	*c.* Request distant terminal or repeater troubleshooting.
7	Order wire communications normal through each radio link from associated RT-773/GRC-103(V), but no order wire communications through either radio link from opposite RT-773/GRC-103(V).	*a.* Defective cable between RT-773/GRC-103(V) PATCH THRU connector and ORDER WIRE PATCH THRU connector on ORDER WIRE PATCH PANEL.	*a.* Check and replace if necessary.
		b. Defective patch cable between ORDER WIRE PATCH PANEL.	*b.* Check and replace if necessary.

Item No.	Symptom	Possible trouble	Corrective measure
8	No indication on T-983(P)/GRC-103(V) or R-1329(P)/GRC-103(V) meters with meter selector switches at REFL PWR. Distant terminal indicates loss of reception.	*a.* Defective CG-3444/U cable between PWR OUT connector of T-983(P)/GRC-103(V) and FROM XMTR connector of R-1329(P)/GRC-103(V).	*a.* Check and replace if necessary.
		b. Defective T-983(P)/GRC-103(V).	*b.* Troubleshoot T-983(P)/GRC-103(V) (para 4-7).
		c. Defective R-1329(P)/GRC-103(V).	*c.* Troubleshoot R-1329-(P)/GRC-103(V) (para 4-7).

d. Cable-to-Radio Conversion Troubleshooting Chart.

Item No.	Symptom	Possible trouble	Corrective measure
1	No indication on R-1329(P)/GRC-103(V) meter with meter selector switch at RCVR SIG, 12 CH PCM, or OW. High indication on T-983(P)/GRC-103(V) meter with meter selector switch at REFL PWR.	*a.* Defective cable between R-1329(P)/GRC-103(V) ANT connector and associated SYSTEM connector on video and antenna entrance box.	*a.* Check and replace if necessary.
		b. Defective antenna cable or antenna.	*b.* Check and replace if necessary.
		c. Defective R-1329(P)/GRC-103(V).	*c.* Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
		d. Defective antenna, antenna cable, or T-983(P)/GRC-103(V) at distant terminal or repeater.	*d.* Keep AN/GRC-103(V) operating; periodically try order wire. Send man to distant terminal or repeater.
2	No indication on R-1329(P)/GRC-103(V) meter with meter selector switch at 12 CH PCM. Associated TD-204/U or TD-754/G has no indication on TEST ALIGN meter with METER SELECT switch at PCM IN-1.	*a.* Defective R-1329(P)/GRC-103(V).	*a.* Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
		b. Defective T-983(P)/GRC-103(V) at distant terminal or repeater.	*b.* Request distant terminal or repeater troubleshooting.
		c. Defective pcm component at distant terminal.	*c.* Request distant terminal troubleshooting.
3	No indication on T-983(P)/GRC-103(V) meter with meter selector switch at 12 CH PCM. All other indications are normal.	*a.* Defective CG-1040B/U cable between T-983(P)/GRC-103(V) VIDEO connector and VIDEO TR XMTR connector on VIDEO PATCH PANEL.	*a.* Check and replace if necessary.
		b. Defective CG-1040B/U cable between TD-204/U or TD-754/G PCM OUT-1 connector and PCM OUT connector of VIDEO PATCH PANEL.	*b.* Check and replace if necessary.
		c. Defective patch cable between PCM OUT and VIDEO TR XMTR connectors on VIDEO PATCH PANEL.	*c.* Check and replace if necessary.
		d. Defective T-983(P)/GRC-103(V).	*d.* Troubleshoot T-983(P)/GRC-103(V) (para 4-7).
		e. Defective TD-204/U or TD-754/G.	*e.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
4	No indication on R-1329(P)/GRC-103(V) meter with meter selector switch at OW. All other indications are normal except that no order wire communication is available through radio link.	*a.* Defective CX-10763/GRC-103(V) cable.	*a.* Check and replace if necessary.
		b. Defective RT-773/GRC-103(V).	*b.* Troubleshoot RT-773/GRC-103(V) (para 4-7).
5	Distant terminal or repeater (radio link side) indicates all indications normal except for order wire reception.	*a.* Defective CX-10763/GRC-103(V).	*a.* Check and replace if necessary.
		b. Defective T-983(P)/GRC-103(V).	*b.* Troubleshoot T-983(P)/GRC-103(V) (para 4-7).
6	All indications normal except for order wire reception (radio link side).	*a.* Defective CX-10763/GRC-103(V).	*a.* Check and replace if necessary.

Item No.	Symptom	Possible trouble	Corrective measure
		b. Defective R-1329(P)/GRC-103(V).	*b*. Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
		c. Defective T-983(P)/GRC-103(V) at distant terminal or repeater.	*c*. Request distant terminal or repeater troubleshooting.
7	Order wire communications normal through radio link side with RT-773/GRC-103(V) and through cable link side with TD-204/U or TD-754/G, but no order wire communications through radio link side from TD-204/U or TD-754/G or cable side from RT-773/GRC-103(V).	*a*. Defective cable between RT-773/GRC-103(V) PATCH THRU connector and ORDER WIRE PATCH PANEL.	*a*. Check and replace if necessary.
		b. Defective cable between TD-204/U or TD-754/G PATCH THRU connector and COMB ORDER WIRE connector on ORDER WIRE PATCH PANEL.	*b*. Check and replace if necessary.
		c. Defective patch cable between COMB ORDER WIRE and ORDER WIRE PATCH THRU connectors on ORDER WIRE PATCH PANEL.	*c*. Check and replace if necessary.
8	No indication on TD-204/U or TD-754/G TEST ALIGN meter with METER SELECT switch at PCM IN-1. Distant terminal or repeater indicates loss of pcm. All other indications are normal.	*a*. Defective CG-1040B/U cable between PCM connector of R-1329(P)/GRC-103(V) and PCM RCVR connector of VIDEO PATCH PANEL.	*a*. Check and replace if necessary.
		b. Defective CG-1040B/U cable between TD-204/U or TD-754/G PCM IN-1 connector and PCM IN connector.	*b*. Check and replace if necessary.
		c. Defective patch cable between PCM IN and PCM RCVR connectors of VIDEO PATCH PANEL.	*c*. Check and replace if necessary.
		d. Defective R-1329(P)/GRC-103(V).	*d*. Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
		e. Defective TD-204/U or TD-754/G.	*e*. Troubleshoot TD-204/U or TD-754/G (para 4-7).
9	No indication on TD-204/U TEST ALIGN meter with METER SELECT switch at TIMING IN or TIM IN on TD-754/G. Distant terminal indicates out of frame pcm. All other indications normal.	*a*. Defective CG-1040B/U cable between R-1329(P)/GRC-103(V) TMG connector and TIME RCVR connector of VIDEO PATCH PANEL.	*a*. Check and replace if necessary.
		b. Defective CG-1040B/U cable between TD-204/U or TD-754/U TIM IN connector and TIME IN connector of VIDEO PATCH PANEL.	*b*. Check and replace if necessary.
		c. Defective patch cable between TIME IN and TIME RCVR connectors of VIDEO PATCH PANEL.	*c*. Check and replace if necessary.
		d. Defective R-1329(P)/GRC-103(V).	*d*. Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
		e. Defective TD-204/U or TD-754/G.	*e*. Troubleshoot TD-204/U or TD-754/G (para 4-7).
10	ALARMS TRAFFIC indicator on TD-204/U or TRAFFIC indicator on TD-754/G lights, buzzer sounds, and order wire is normal.	*a*. Defective TD-206/G in cable link.	*a*. Troubleshoot cable link (para 4-6).
		b. Defective TD-204/U or TD-754/G.	*b*. Troubleshoot TD-204/U or TD-754/G (para 4-7).
		c. Defective pcm component at distant terminal or repeater.	*c*. Request distant terminal or repeater troubleshooting.
11	ALARMS TRAFFIC indicator of TD-204/U or TRAFFIC indicator on TD-754/G lights, buzzer sounds and no order wire available.	*a*. Defective TD-206/G in cable link.	*a*. Troubleshoot cable link (para 4-6).
		b. Defective transmission cable in cable link.	*b*. Troubleshoot cable link (para 4-6).

Item No.	Symptom	Possible trouble	Corrective measure
		c. Defective TD-204/U or TD-754/G.	*c.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
		d. Defective TD-204/U or TD-754/G at distant terminal or repeater.	*d.* Keep TD-204/U or TD-754/G operating. Periodically try order wire and wait response. Send man to distant terminal or repeater.
		e. Defective cable from FROM CABLE SYS connector of CABLE PATCH PANEL to IN connector of antenna and video entrance box.	*e.* Check and replace if necessary.
		f. Defective CG-1040B/U cable from FROM CABLE COMB connector of CABLE PATCH PANEL to TD-204/U or TD-754/G FROM CABLE connector.	*f.* Check and replace if necessary.
		g. Defective patch cable between FROM CABLE SYS and COMB connectors of CABLE PATCH PANEL.	*g.* Check and replace if necessary.
12	ALARMS TRAFFIC indicator of TD-204/U or TRAFFIC indicator of TD-754/G and ALARMS NO CABLE CURRENT indicator light and buzzer sounds. No order wire available.	Open transmission cable (both directions) in cable link.	Troubleshoot cable link (para 4-6).
13	ALARMS NO CABLE CURRENT indicator on TD-204/U or CABLE CUR indicator on TD-754/G lights and buzzer sounds. Order wire is normal.	*a.* Momentary overcurrent or undercurrent in cable link.	*a.* Operate CABLE POWER switch to OFF and then to ON.
		b. Defective TD-204/U or TD-754/G.	*b.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
14	ALARMS NO CABLE CURRENT indicator on TD-204/U or CABLE CUR on TD-754/G lights. No order wire transmission (cable link side).	*a.* Defective cable from TO CABLE SYS connector of CABLE PATCH PANEL to OUT connector of antenna and video entrance box.	*a.* Check and replace if necessary.
		b. Defective CG-1040B/U cable from TO CABLE COMB connector of CABLE PATCH PANEL to TD-204/U or TD-754/G TO CABLE connector.	*b.* Check and replace if necessary.
		c. Open transmission cable (send side) in cable link.	*c.* Troubleshoot cable link (para 4-6).
15	Distant terminal (cable link side) indicates loss of pcm. All local indications are normal.	Defective TD-206/G in cable link.	Troubleshoot cable link (para 4-6).
16	Switchboard operator at distant terminal reports high noise level, but all local indications are normal.	*a.* Defective TD-204/U or TD-754/G.	*a.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
		b. Defective R-1329(P)/GRC-103(V).	*b.* Troubleshoot R-1329(P)/GRC-103(V) (para 4-7).
17	Order wire garbled and noisy, but all other indications are normal.	*a.* Defective TD-204/U or TD-754/G.	*a.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
		b. Defective RT-773(P)/GRC-103(V).	*b.* Troubleshoot RT-773(P)/GRC-103(V) (para 4-7).
18	No order wire available (cable link side), but all other indications are normal.	*a.* Defective TD-204/U or TD-754/G.	*a.* Troubleshoot TD-204/U or TD-754/G (para 4-7).
		b. Defective TD-204/U or TD-754/G at distant terminal or repeater.	*b.* Send man to distant terminal or repeater to request troubleshooting at distant terminal or repeater.
19	Distant terminal (cable link side) indicates out of frame pcm and all local indications are normal.	*a.* Defective TD-206/G in cable link.	*a.* Troubleshoot cable link (para 4-6).
		b. Defective TD-204/U or TD-754/G.	*b.* Troubleshoot TD-204/U or TD-754/G (para 4-7).

Item No.	Symptom	Possible trouble	Corrective measure
20	Incorrect indication on TEST ALIGN meter of TD-204/U or TD-754/G with METER SELECT switch at SERV FAC and SERV SEL switch at RCC.	Cable current adjustment required at distant terminal	Request cable current adjustment at distant terminal or repeater.
21	Distant terminal or repeater request cable current adjustment. TEST ALIGN meter of local TD-204/U does not indicate in yellow area with METER SELECT switch at CABLE I (CABLE CUR, and green area on TD-754/G).	Cable current adjustment required.	Adjust CABLE CURRENT ADJ control for center hairline indication in yellow area of TEST ALIGN meter on TD-204/U or green area on TD-754/G.
22	TD-204/U TEST ALIGN meter does not give correct indication with METER SELECT switch at CABLE V (CABLE VOLTS TD-754/G).	Shorted transmission cable in cable link.	Troubleshoot cable link (para 4-6).

e. Loopback Checks. Output circuits of the TD-204/U or TD-754/G and the AN/GRC-103 (V) may be looped back to the input circuits to verify isolation of trouble in a system. The loopback checks must be coordinated with the distant terminal or repeater whenever possible. Determine which side of the component to check, perform the special conditions, and connect the cables as required. Check the component by operating the METER SELECT switch (TD-204/U or TD-754/G) and meter selector switches (AN/GRC-103 (V)) according to paragraph 4-2 and observe the various indications. When the loopback checks are complete, reconnect the cables for the system requirements.

WARNING

Make sure cable current is shut off at both local and distant TD-204/U's or TD-754/G's before changing CABLE PATCH PANEL patching.

Component	System side	Special conditions	Patch panel connection	
			From—	To—
TD-204/U or TD-754/G	Pcm	None	COMB PCM OUT [a] COMB TIME OUT [a]	COMB PCM IN [a] COMB TIME IN [a]
	Cable	MILES switches at ½; CABLE POWER or CABLE CUR switch at OFF.	SYS TO CABLE [b]	SYS FROM CABLE [b]
AN/GRC-103(V)	Pcm	None	RADIO PCM RCVR [a]	RADIO VIDEO TR XMTR [a]
	Radio	Loop test set connected between R-1329(P)/GRC-103(V) ANT connector and Dummy Load, Electrical DA-437/GRC 103(V). Loop test set power obtained from power supply PP-6917/GR. [c] R-1329(P)/GRC-103(V) and T-983(P)/GRC-103(V) tuned 25 MHz (50 channels) apart.	None	None

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[a] VIDEO PATCH PANEL.

[b] CABLE PATCH PANEL.

[c] Operate power supply voltage control to MIN when connecting and disconnecting and to MAX for test.

4-6. Cable Link Troubleshooting

a. Order Wire Available With no Pcm or Shorted Transmission Cable.

(1) Disconnect the CG-1040B / U cable from the TD-204 / U or TD-754 / G PCM IN-1 connector.

(2) Operate the TD-204 / U or TD-754 / G METER SELECT switch to SERV FAC.

(3) Loosen the TD-204 / U front panel screws, press the PUSH TO RELEASE CHASSIS button, and pull the front panel forward.

(4) Operate the TD-204 / U SERV SEL switch to R, or the TD-754 / G to FL.

(5) Operate the TD-204 / U or TD-754 / G NORM OPR-ZERO SET-READ switch to ZERO SET.

(6) Adjust the ZERO SET control for a center hairline indication on the TEST ALIGN meter.

(7) Operate the TD-204 / U or TD-754 / G NORM OPR-ZERO SET-READ switch to READ.

(8) Operate the TD-204 / U or TD-754 / G SYSTEM FAULT LOCATOR MILES switches for a center hairline indication on the TEST ALIGN meter (as close as possible).

(9) From the positions of the SYSTEM FAULT LOCATOR MILES switches, determine the number of good TD-206 / G's between the TD-204 / U or TD-754 / G and the defective cable section or TD-206 / G.

(10) Operate the TD-204 / U or TD-754 / G SYSTEM FAULT LOCATION MILES switches to 0 and the NORM OPR-ZERO SET-READ switch to NORM OPR.

(11) Slide the TD-204 / U front panel back until it locks into place and tighten the front panel screws.

(12) Operate the TD-204 / U CABLE POWER switch or TD-754 / G CABLE CURRENT switch at each end of the cable link to OFF.

(13) Send a lineman out to troubleshoot with the AN / PTM-7.

WARNING

> Do not operate the TD-204 / U CABLE POWER switch or TD-754 / G CABLE CURRENT switch to ON at either end of the cable link unless requested by the lineman. If the CABLE POWER or CABLE CURRENT switch is operated to ON, voltages as high as 1,100 volts may be present in the transmission cable.

troubleshoot and make the necessary replacement (cable section or TD-206 / G).

b. Order Wire Available With Pcm Out of Frame or Noise on All Channels.

(1) Operate the TD-204 / U CABLE POWER switch or TD-754 / G CABLE CURRENT switch at each end of the cable link to OFF.

(2) Send a lineman out to the TD-206 / G at the midpoint in the cable link with the AN / PTM-7 and instruct him to connect into the cable link.

(3) When order wire is established with the lineman, instruct him to perform the loopback check with the AN / PTM-7.

WARNING

> Do not operate the TD-204 / U CABLE POWER switch or TD-754 / G CABLE CURRENT switch to ON at either end of the cable link unless requested by the lineman. If the CABLE POWER or CABLE CURRENT switch is operated to ON, voltages as high as 1,100 volts may be present in the transmission cable.

(4) Operate the CABLE POWER or CABLE CURRENT switch to ON at both ends of the cable link and check to see which end of the cable link has a FRAME ALARM indicator lighted on the TD-660 / G for the associated terminal, or noise on all channels.

(5) When the indications are obtained, operate the CABLE POWER or CABLE CURRENT switch at each end of the link to OFF.

(6) Instruct the lineman to substitute another TD-206 / G in the cable link. When the substitution is completed, operate the CABLE POWER or CABLE CURRENT switch to ON and check to see if the trouble still exists.

(7) If the trouble is not corrected, instruct the lineman to replace the original TD-206 / G in the link and proceed to a TD-206 / G halfway between his position and the end of the cable link that reported a frame alarm or noise on all channels during the first loop-back check ((4) above).

(8) Perform the procedures given in (3) through (6) above at the next TD-206 / G. If the trouble is not corrected, instruct the lineman to replace the original TD-206 / G and continue the troubleshooting procedures until the defective TD-206 / G is located.

c. No Order Wire or Pcm Available.

NOTE

> If the TD-204 / U ALARMS NO CABLE CURRENT indicator or TD-754 / G CABLE CUR indicator remains extinguished after the CABLE POWER or CABLE CUR switch is operated to OFF and then to ON, the transmission cable is shorted. Perform the procedures given in *a* above to locate the shorted cable section. When the TD-204 / U ALARMS NO

CABLE CURRENT indicator or TD-754/G CABLE CUR indicator immediately lights after the CABLE POWER or CABLE CURRENT switch is operated to OFF and then to ON, the transmission cable is open. Perform the procedures given in (1) through (5) below to locate the defective cable section.

(1) Operate the TD-204/U CABLE POWER switch or TD-754/G CABLE CURRENT switch to OFF.

(2) Disconnect the cable from the TD-204/U or TD-754/G TO CABLE connector and connect it to Test Set TS-27B/TSM.

(3) Measure the capacitance of the cable with the TS-27B/TSM and translate the indication into the distance to the fault (fig. 4-1).

(4) If the indicated distance exceeds 10 miles, send a lineman out to the 10-mile point to repeat the measurements.

(5) Instruct the lineman to use the AN/PTM-7 at the cable connection nearest the fault to locate the distance to the fault.

NOTE

When the fault is located in a section of the cable link where two cable sections join, use the AN/PTM-7 order wire facility to determine which cable section is at fault.

(6) When the fault is located, replace the cable section.

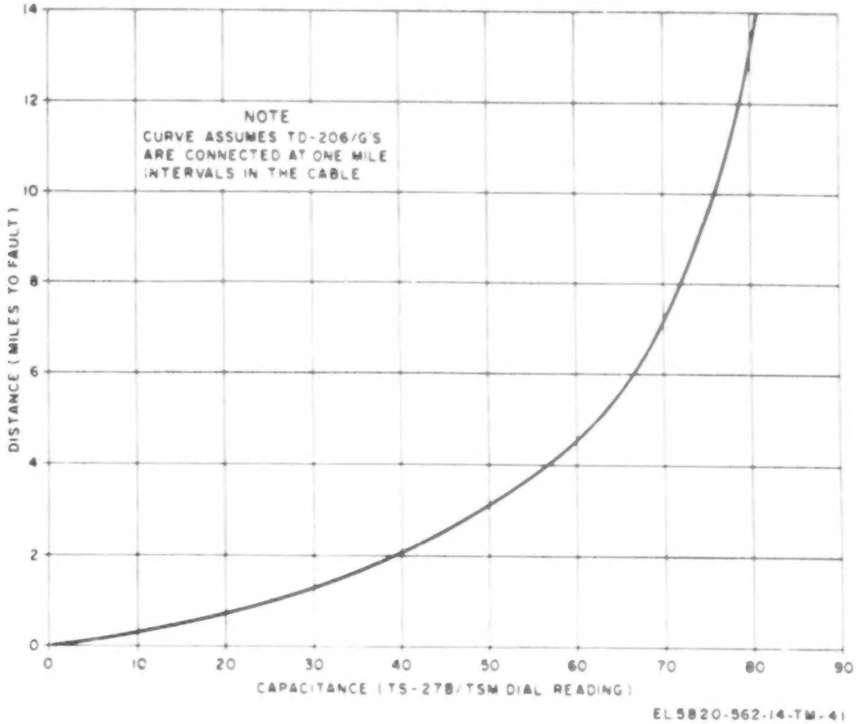

Figure 4-1. Test Set TS-27B/TSM, CX-4245/G transmission cable capacitance-distance curve.

4-7. Assemblage Troubleshooting

a. General. Replacement and repair of components and parts for the AN/TRC-113 are authorized for the various categories of maintenance personnel as indicated in section II, appendix B. The tools and test equipment required are listed in section III, appendix B. The troubleshooting information in the troubleshooting chart (*b* below) is based on symptoms that would be obtained while performing the operator's daily preventive maintenance checks and services (para 4-2) and organizational monthly preventive maintenance checks and services (para 4-3). When an abnormal symptom is obtained, locate the symptom is the troubleshooting chart and perform the corrective measure indicated, as authorized in the maintenance allocation chart. If the corrective measure does not correct the trouble, replace the component and refer the defective component to higher category of maintenance.

b. Troubleshooting Chart.

Item No.	Symptom	Possible trouble	Corrective measure
1	POWER INDICATOR neon light fails to glow and no indication on AC VOLTS meter when power is applied to assemblage.	*a.* Defective power cable	*a.* Check and repair or replace as required.
		b. Defective POWER 115V AC IN receptacle J1. *Note.* If immediate operation is required, and POWER 115V AC OUT receptacle J2 is not used to power another assemblage, use POWER 115V AC OUT receptacle J2 for input power.	*b.* Replace receptacle.
		c. Defective filter FL1 or FL2	*c.* Check and make necessary replacement.
2	POWER INDICATOR neon light fails to glow when power is applied to assemblage. AC VOLTS meter indicates normal.	*a.* Defective lamp DS19	*a.* Replace lamp.
		b. Defective lamp socket XD S19.	*b.* Check and repair or replace as required.
		c. Defective ac wiring	*c.* Check and repair as required.
3	AC VOLTS meter does not indicate when power is applied to assemblage. POWER INDICATOR neon light normal.	Defective AC VOLTS meter M1.	Replace meter.
4	No ac power available inside assemblage but POWER INDICATOR neon light and AC VOLTS meter are normal.	Defective MAIN circuit breaker CB8.	Replace circuit breaker.
5	Glowlamp fails to glow when associated circuit breaker is operated to ON.	*a.* Defective associated glowlamp (DS1-DS7).	*a.* Replace glowlamp.
		b. Defective circuit breaker (CB1-CB7).	*b.* Replace circuit breaker.
6	No ac power available at 115V AC receptacle in POWER ENTRANCE BOX. Ac power available inside assemblage.	*a.* Defective CONV BREAKER circuit breaker CB9.	*a.* Replace circuit breaker.
		b. Defective receptacle J3	*b.* Replace receptacle.
7	Fluorescent ceiling lights do not light when FLUORESCENT LIGHTS switch is operated to ON. Incandescent lights normal.	*a.* Defective FLUORESCENT LIGHTS switch S2.	*a.* Replace switch.
		b. Defective ac wiring	*b.* Check and repair as required.
8	Incandescent ceiling lights do not light when INCANDESCENT COLD START LIGHTS switch is operated to ON. Fluorescent lights normal.	*a.* Defective INCANDESCENT COLD START LIGHTS switch S4.	*a.* Replace switch.
		b. Defective ac wiring	*b.* Check and repair as required.
9	Neither fluorescent nor incandescent ceiling lights light when FLUORESCENT LIGHTS and INCANDESCENT COLD START LIGHTS switches are operated to ON. BYPASS-BLACKOUT switch is at OFF.	*a.* Defective LIGHTS circuit breaker CB1.	*a.* Replace circuit breaker.
		b. Defective interlock switch S1	*b.* Replace interlock switch.
		c. Defective ac wiring	*c.* Check and repair as required.
10	Ceiling lights do not extinguish when door is opened and BYPASS-BLACKOUT switch is at OFF.	Defective interlock switch S1	Replace interlock switch.
11	Exhaust blower fails to operate when BLOWER switch is operated to ON.	*a.* Defective exhaust blower	*a.* Check and repair or replace as required.
		b. Defective associated BLOWER switch (S6 or S7).	*b.* Replace switch.
		c. Defective associated BLOWER receptacle (J7 or J8).	*c.* Replace receptacle.
12	Both exhaust blowers fail to operate when BLOWER switches are operated to ON.	*a.* Defective BLOWERS circuit breaker CB2.	*a.* Replace circuit breaker.
		b. Defective associated wiring.	*b.* Check and repair as required.
13	Heater No. 1 fails to operate.	*a.* Defective HTR-1 circuit breaker CB3.	*a.* Replace circuit breaker.
		b. Defective HEATER 1 receptacle J9.	*b.* Replace receptacle.

Item No.	Symptom	Possible trouble	Corrective measure
		c. Defective heater	*c.* Check and repair or replace as required.
14	Heater No. 2 fails to operate.	*a.* Defective EQUIPMENT-HEATER switch S5.	*a.* Replace switch.
		b. Defective HEATER 2 receptacle J5.	*b.* Replace receptacle.
		c. Defective heater	*c.* Check and repair or replace as required.
15	All rack equipment fails to operate.	*a.* Defective EQUIPMENT-HEATER switch S5.	*a.* Replace switch.
		b. Defective ac wiring to racks	*b.* Check and repair as required.
16	Heater No. 2 fails to operate with EQUIPMENT-HEATER switch at HEATER and all rack equipment fails to operate with EQUIPMENT-HEATER switch at EQUIPMENT.	*a.* Defective EQUIP circuit breaker CB6.	*a.* Replace circuit breaker.
		b. Defective EQUIPMENT-HEATER switch S5.	*b.* Replace switch.
		c. Defective ac wiring	*c.* Check and repair as required.
17	No ac power available at any CONVENIENCE receptacles.	Defective CONV circuit breaker CB7.	Replace circuit breaker.
18	No ac power available at a specific CONVENIENCE receptacle.	Defective CONVENIENCE receptacle (J5, J6, or J16).	Replace receptacle.
19	LS-147C / FI does not operate.	*a.* Defective INTERCOM circuit breaker CB4.	*a.* Replace circuit breaker.
		b. Defective INTERCOM receptacle J17.	*b.* Replace receptacle.
		c. Defective LS-147C / FI	*c.* Check and repair or replace as required.
20	Local communications not available with TA-312 / PT.	*a.* Defective TA-312 / PT	*a.* Check and repair or replace as required.
		b. Defective wiring	*b.* Check and repair as required.
21	TD-204 / U, AC POWER indicator does not light and blower is not heard when AC POWER switch is operated to ON.	*a.* Defective power cable to TD-204 / U.	*a.* Check and replace if necessary.
		b. Defective 1A fuse	*b.* Replace 1A fuse.
		c. Defective power supply assembly 6A1.	*c.* Replace power supply assembly.
22	Incorrect indication on TD-204 / U TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at—	Adjustment of following VOLTAGE ADJ control required:	Adjust following VOLTAGE ADJ control for hairline indication in yellow area of TEST ALIGN meter:
	a. —10.	*a.* —10V.	*a.* —10V.
	b. +10.	*b.* +10V.	*b.* +10V.
	c. SUM ± 3.	*c.* ± 3V.	*c.* ± 3V.
	d. BAL.	*d.* ± 3V BAL.	*d.* ± 3V BAL.
23	No indication on TD-204 / U TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at—	Defective fuse as indicated below.	Replace with SPARES fuse indicated below:
	a. —10.	*a.* ¼A —10V.	*a.* ¼A.
	b. +10.	*b.* ¼A +10V.	*b.* ¼A.
	c. SUM ± 3.	*c.* 1A +3V —3V.	*c.* 1A.
24	No order wire communications through cable link using TD-204 / U. All other indications normal.	Defective TD-204 / U panel 6A2.	Replace panel 6A2.
25	Incorrect or no indication on TD-204 / U TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at —10, +10, SUM ± 3, or BAL; adjustment or fuse replacement does not correct trouble.	Defective power supply assembly 6A1.	Replace power supply assembly 6A1.
26	TD-204 / U ALARMS CHANGE AIR FILTER indicator lighted.	*a.* Dirty or clogged air filter	*a.* Clean or replace.
		b. Power supply assembly 6A1 overheating.	*b.* Replace power supply assembly 6A1.

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Item No.	Symptom	Possible trouble	Corrective measure
27	TD-204 / U ALARMS NO CABLE CURRENT indicator lights with CABLE POWER switch at ON. Resetting does not correct trouble.	*a.* Defective 2A CABLE I fuse. *b.* Defective TO CABLE LIGHTNING ARRESTOR. *c.* Overcurrent adjustment. .... *d.* Defective power supply assembly 6A1.	*a.* Replace with SPARES 2A fuse. *b.* Replace lightning arrestor. *c.* Adjust overcurrent (appx. A) *d.* Replace power supply assembly 6A1.
28	Incorrect indication on TD-204 / U TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at following positions:	Following panel defective:	Replace following panel:
	a. A.	*a.* 6A4.	*a.* 6A4.
	b. B.	*b.* 6A4.	*b.* 6A4.
	c. C.	*c.* 6A7.	*c.* 6A7.
	d. D.	*d.* 6A7.	*d.* 6A7.
	e. E.	*e.* 6A7.	*e.* 6A7.
	f. F.	*f.* 6A7.	*f.* 6A7.
	g. G.	*g.* 6A7.	*g.* 6A7.
	h. H.	*h.* 6A5.	*h.* 6A5.
	i. K.	*i.* 6A6.	*i.* 6A6.
	j. L.	*j.* 6A6.	*j.* 6A6.
	k. M.	*k.* 6A6.	*k.* 6A6.
	l. N.	*l.* 6A6.	*l.* 6A6.
	m. O.	*m.* 6A3.	*m.* 6A3.
	n. P.	*n.* 6A3.	*n.* 6A3.
	o. Q.	*o.* 6A2.	*o.* 6A2.
	p. S.	*p.* 6A7.	*p.* 6A7.
29	T-983(P) / GRC-103(V) AC POWER and LOW POWER indicators do not light, buzzer is silent, and blower does not operate when AC POWER switch is operated to ON / RESET.	*a.* Defective power cable to T-983(P) / GRC-103(V). *b.* Defective power supply 5TR1P-S1.	*a.* Check and replace if necessary. *b.* Replace T-983(P) / GRC-103(V).
30	T-983(P) / GRC-103(V) AC POWER and LOW POWER indicators light, buzzer sounds, but blower does not operate when AC POWER switch is operated to ON / RESET.	*a.* Defective centrifugal fan 5A2B1. *b.* Defective power supply 5TR1P-S1.	*a.* Check and replace if necessary (app. A). *b.* Replace T-983(P) / GRC-103(V).
31	T-983(P) / GRC-103(V) LOW POWER indicator lights, buzzer sounds, and blower operates, but AC POWER indicator does not light when AC POWER switch is operated to ON / RESET.	Defective AC POWER lamp.	Replace lamp.
32	T-983(P) / GRC-103(V) AC POWER indicator lights, buzzer sounds, and blower operates, but LOW POWER indicator does not light when AC POWER switch is operated to ON / RESET.	Defective LOW POWER lamp.	Replace lamp.
33	T-983(P) / GRC-103(V) AC POWER and LOW POWER indicators light and blower operates, but buzzer does not sound when AC POWER switch is operated to ON / RESET.	*a.* BUZ OFF / ALM NOR switch at incorrect setting. *b.* Defective BUZZER OFF switch or defective buzzer.	*a.* Check switch (right-hand side, front upper corner of transmitter head) and reset if necessary. *b.* Replace T-983(P) / GRC-103(V).
34	T-983(P) / GRC-103(V) OVERHEAT indicator lights when AC POWER switch is operated to ON / RESET	Defective switch assembly 6AR1A1A1.	Replace T-983(P) / GRC-103(V).
35	T-983(P) / GRC-103(V) SYNC indicator does not extinguish within 10 seconds after AC POWER switch is operated to ON / RESET.	Defective power supply 5TR1PS1 or electrical frequency synthesizer 5TR1A2.	Replace T-983(P) / GRC-103(V).

Item No.	Symptom	Possible trouble	Corrective measure
36	T-983(P)/GRC-103(V) meter indicates below normal with meter selector switch at 12 VDC or 28 VDC.	Defective power supply 5TR1PS1 or other module in radio transmitter 5TR1.	Replace T-983(P)/GRC-103(V).
37	T-983(P)/GRC-103(V) LOW POWER indicator does not extinguish within 60 seconds after AC POWER switch is operated to ON/RESET and meter indication is below normal with meter selector switch at 600 VDC.	Defective power supply assembly 5TR1PS1 or switch assembly 6AR1A1A1.	Replace T-983(P)/GRC-103(V).
38	T-983(P)/GRC-103(V) LOW POWER indicator does not extinguish within 60 seconds after AC POWER switch is operated to ON/RESET and meter indicates normal with meter selector switch at 600 VDC.	*a*. Incorrect setting of XMTR TUNE control. *b*. Incorrect tuning of PWR OUT PEAK control. *c*. Defective driver tube or final tube. *d*. Defective control alarm 5TR1A3. *e*. Defective power monitor 6AR1A3 or power supply 5TR1PS1.	*a*. Reset control. *b*. Retune control. *c*. Replace tube (appx A). *d*. Replace control alarm (app. A). *e*. Replace T-983(P)/GRC-103(V).
39	T-983(P)/GRC-103(V) meter indicates below normal with meter selector switch at OSC.	*a*. Defective control indicator 6A3. *b*. Defective electrical frequency synthesizer 5TR1A2.	*a*. Replac control indicator (app. A). *b*. Replace T-983(P)/GRC-103(V).
40	T-983(P)/GRC-103(V) meter indicates below normal with meter selector switch at DOUBLER. Normal indication is OSC position.	Defective amplifier-frequency.	Replace T-983(P)/GRC-103(V).
41	T-983(P)/GRC-103(V) meter indicates below normal with meter selector switch at MULT. Normal indication in DOUBLER POSITION.	*a*. Incorrect setting of XMTR TUNE control. *b*. Incorrect tuning of PWR OUT PEAK control. *c*. Defective electronic switch 6A1. *d*. Defective frequency multiplier assembly 6A2.	*a*. Reset control. *b*. Retune control. *c*. Replace electronic switch (app. A). *d*. Replace T-983(P)/GRC-103(V).
42	T-983(P)/GRC-103(V) meter indicates below normal with meter selector switch at DRIVER. Normal indication in MULT position.	*a*. Incorrect setting of XMTR TUNE control. *b*. Incorrect tuning of PWR OUT PEAK control. *c*. Defective driver tube	*a*. Reset control. *b*. Retune control. *c*. Replace tube (app. A).
43	T-983(P)/GRC-103(V) meter indicates below normal with meter selector switch at PWR OUT. Normal indication in DRIVER position, but R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at XMTR DUPL.	*a*. Incorrect setting of XMTR TUNE control. *b*. Incorrect tuning of PWR OUT PEAK control. *c*. Defective final tube	*a*. Reset control. *b*. Retune control. *c*. Replace tube (app. A).
44	T-983(P)/GRC-103(V) meter indicates below normal with meter selector switch at PWR OUT. Normal indication in DRIVER position, and R-1329(P)/GRC-103(V) meter selector switch at XMTR DUPL.	*a*. Incorrect setting of XMTR TUNE control. *b*. Incorrect tuning of PWR OUT PEAK control. *c*. Defective final tube *d*. Defective power monitor 6AR1A3.	*a*. Reset control. *b*. Retune control. *c*. Replace tube (app. A). *d*. Replace T-983(P)/GRC-103(V).
45	T-983(P)/GRC-103(V) LOW POWER indicator does not extinguish but meter indication is normal with meter selector switch at PWR OUT.	*a*. Defective control alarm 5TR1A3. *b*. Defective power supply 5TR1PS1.	*a*. Replace control alarm (app. A). *b*. Replace T-983(P)/GRC-103(V).
46	T-983(P)/GRC-103(V) meter indicates above normal with meter selector switch at REFL PWR. R-1329(P)/GRC-103(V) meter indicates normal with meter selector switch at REFL PWR.	*a*. Defective CG-3444/U cable. *b*. Defective duplexer 2A1A1 or power monitor 2A1A5.	*a*. Replace cable. *b*. Replace T-983(P)/GRC-103(V).

Item No.	Symptom	Possible trouble	Corrective measure
47	T-983(P)/GRC-103(V) meter indicates above normal with meter selector switch at REFL PWR. R-1329(P)/GRC-103(V) meter indicates above normal with meter selector switch at REFL PWR.	Poor line connections or damaged transmission line or antenna.	Check by substitution of dummy load sequentially moving from ANT connector to antenna.
48	T-983(P)/GRC-103(V) meter indicates below normal with meter selector switch at 12 CH PCM. INPUT control at maximum.	*a.* Defective amplifier-monitor 5TR1A5. *b.* Defective INPUT control.	*a.* Replace amplifier-monitor (app. A). *b.* Replace T-983(P)/GRC-103(V).
49	T-983(P)/GRC-103(V) OVERHEAT indicator lights and all other indications are normal.	*a.* Clogged air filter *b.* Defective centrifugal fan 5A2B1.	*a.* Check filter, ducts, and radiators. Clean any air-flow obstructions. *b.* Replace T-983(P)/GRC-103(V).
50	T-983(P)/GRC-103(V) meter has no indication for any position of meter selector switch. All other indications are normal.	Defective meter 5TRA1M1 or meter switch 5TRA1S1.	Replace T-983(P)/GRC-103(V).
51	R-1329(P)/GRC-130(V) AC POWER and LOW SIGNAL indicators do not light, and buzzer is silent when ac power switch is operated to ON.	*a.* Defective power cable to R-1329(P)/GRC-103(V). *b.* Defective power supply 1RE1PS1. *c.* Defective switch 1RE1A1CB1.	*a.* Check and replace if necessary. *b.* Replace power supply (app. A). *c.* Replace R-1329(P)/GRC-103(V).
52	R-1329(P)/GRC-103(V) LOW SIGNAL indicator lights and buzzer sounds but AC POWER indicator does not light when AC POWER switch is operated to ON.	Defective AC POWER lamp.	Replace lamp.
53	R-1329(P)/GRC-103(V) AC POWER indicator lights and buzzer sounds but LOW SIGNAL indicator does not light when AC POWER switch is operated to ON.	Defective LOW SIGNAL lamp.	Replace lamp.
54	R-1329(P)/GRC-103(V) AC POWER and LOW SIGNAL indicators light but buzzer does not sound when AC POWER switch is operated to ON.	*a.* BUZ OFF/ALM NOR switch at incorrect setting. *b.* Defective BUZZER OFF switch or defective buzzer.	*a.* Check switch (left-hand side, front upper corner of receiver head) and reset if necessary. *b.* Replace R-1329(P)/GRC-103(V).
55	R-1329(P)/GRC-103(V) SYNC indicator does not extinguish within 10 seconds after AC POWER switch is operated to ON.	*a.* Defective power supply 1RE1A2. *b.* Defective electrical frequency synthesizer 1RE1A2.	*a.* Replace power supply (app. A). *b.* Replace R-1329(P)/GRC-103(V).
56	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at + 12 VDC.	*a.* Defective CX-10763/GRC-103(V) cable. *b.* Defective receiver head. *c.* Defective RT-773/GRC-103(V). *d.* Defective power supply 1RE1PS1.	*a.* Check and replace if necessary. *b.* Replace receiver head. *c.* Replace RT-773/GRC-103(V). *d.* Replace power supply (app. A).
57	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at —12 VD.	*a.* Defective power supply 1RE1PS1. *b.* Defective module in R-1329(P)/GRC-103(V). *c.* Defective receiver head.	*a.* Replace power supply (app. A). *b.* Replace R-1329(P)/GRC-103(V). *c.* Replace receiver head.
58	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at XMTR DUPL. T-983(P)/GRC-103(V) meter indicates normal with meter selector switch at PWR OUT.	*a.* Incorrect XMTR DUPL control setting. *b.* Defective CG-3444/U cable. *c.* Defective duplexer 2A1A1 or power monitor 2A1A5.	*a.* Reset control. *b.* Check and replace if necessary. *c.* Replace R-1329(P)/GRC-103(V).
59	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at OSC.	*a.* Defective control-indicator 2A2. *b.* Defective electrical frequency synthesizer 1RE1A2.	*a.* Replace control-indicator (app. A). *b.* Replace R-1329(P)/GRC-103(V).

Item No.	Symptom	Possible trouble	Corrective measure
60	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at DOUBLER. Normal indication in OSC position.	Defective amplifier-frequency multiplier 1RE1A5.	Replace amplifier-frequency multiplier (app. A).
61	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at MULT. Normal indication in DOUBLER position.	*a.* Incorrect setting of RCVR SIG control. *b.* Incorrect tuning of MULT PEAK control. *c.* Defective control indicator 2A2. *d.* Defective frequency multiplier 2A1A2A1 or electrical frequency synthesizer 1RE1A2.	*a.* Reset control. *b.* Retune control. *c.* Replace control-indicator (app. A). *d.* Replace R-1329(P)/GRC-103(V).
62	R-1320(P)/GRC-103(V) meter indicates below normal with meter selector switch at RCVR SIG. Normal indication in MULT position but LOW SIGNAL indicator does not extinguish.	*a.* RCVR SIG or RCVR CHANNEL control incorrectly adjusted. *b.* Antenna facing wrong direction. *c.* Defective frequency mixer stage 2A1A2A2, radio-frequency amplifier 2A1AR1, or low-pass filter 2A1A1FL1. *d.* Defective T-983(P)/GRC-103(V) at distant terminal or repeater.	*a.* Adjust control. *b.* Check azimuth. *c.* Replace R-1329(P)/GRC-103(V). *d.* Send man to distant terminal or repeater to request troubleshooting.
63	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at RCVR SIG. LOW SIGNAL indicator does not light, no order wire noise, and no reception.	*a.* Defective intermediate frequency amplifier 1RE1AR2. *b.* Defective bandpass filter 1RE1FL1. *c.* Defective intermediate frequency amplifier 2A1A2AR1. *d.* Defective receiver head or radio receiver 1RE1.	*a.* Replace intermediate frequency amplifier (app. A). *b.* Replace bandpass filter (app. A). *c.* Replace intermediate frequency amplifier (app. A). *d.* Replace receiver head or radio receiver 1RE1.
64	R-1329(P)/GRC-103(V) meter indicates normal with meter selector switch at RCVR SIG but LOW SIGNAL indicator does not extinguish.	Defective video amplifier 1RE1AR1.	Replace video amplifier (app. A).
65	R-1329(P)/GRC-103(V) meter indicates normal with meter selector switch at RCVR SIG and LOW SIGNAL indicator is extinguished but there is no reception or order wire noise.	*a.* Defective video amplifier 1RE1AR1. *b.* Defective electrical frequency limiter discriminator 1RE1A4.	*a.* Replace video amplifier (app. A). *b.* Replace electrical frequency limiter discriminator 1RE1A4.
66	R-1329(P)/GRC-103(V) meter indicates above normal with meter selector switch at REFL PWR. T-983(P)/GRC-103(V) meter indicates normal with meter selector switch at REFL PWR.	Defective power monitor 6AR1A3 or duplexer 2A1A1.	Replace radio receiver 1RE1.
67	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at 12 CH PCM. All other indications are normal.	*a.* Defective pulse from restorer 1RE1A3. *b.* Defective video amplifier 1RE1AR1. *c.* Defective component at distant terminal or repeater.	*a.* Replace pulse form restorer (app. A). *b.* Replace video amplifier (app. A). *c.* Request distant terminal or repeater troubleshooting.
68	R-1329(P)/GRC-103(V) meter indicates below normal with meter selector switch at OW. No order wire signaling or communication reception available. All other indications are normal.	*a.* Defective pulse form restorer 1RE1A3. *b.* Defective T-983(P)/GRC-103(V) at distant terminal or repeater.	*a.* Replace pulse form restorer (app. A). *b.* Send man to distant terminal or repeater to request troubleshooting.
69	R-1329(P)/GRC-103(V) HIGH SIGNAL indicator lights, buzzer sounds, and no reception available from distant terminal or repeater.	Defective electronic switch 2A4.	Replace electronic switch (app. A).

Item No.	Symptom	Possible trouble	Corrective measure
70	R-1329(P)/GRC-103(V) HIGH SIGNAL indicator lights. All other indications are normal.	Defective power supply 2PS1.	Replace power supply (app. A).
71	R-1329(P)/GRC-103(V) meter has no indication for any position of meter selector switch. All other indications are normal.	Defective meter 1RE1A1M1 or meter switch 1RE1A1S1.	Replace radio receiver 1RE1.
72	RT-773/GRC-103(V) POWER indicator does not light when R-1329(P)/GRC-103(V) AC POWER switch is operated to ON. All other indications are normal.	Defective POWER indicator lamp.	Replace lamp.
73	RT-773/GRC-103(V) POWER indicator does not light when R-1329(P)/GRC-103(V) AC POWER switch is operated to ON and there is no order wire communications.	*a.* Defective CX-10763/GRC-103(V) cable. *b.* Defective power supply 1RE1PS1.	*a.* Replace cable. *b.* Replace power supply (app. A).
74	RT-773/GRC-103(V) CALL indicator does not light when order wire signal is received but buzzer sounds.	Defective CALL indicator lamp.	Replace lamp.
75	RT-773/GRC-103(V) CALL indicator lights, but buzzer does not sound when order wire signal is received.	*a.* BUZ OFF/ALM NOR switch at incorrect setting. *b.* Defective buzzer.	*a.* Check switch (rear of front panel) and reset if necessary. *b.* Replace RT-773/GRC-103(V).
76	1,600-Hz tone is not heard in H-60/PT when RT-773/GRC-103(V) RING button is pressed and no order wire communications.	*a.* Defective telephone signal converter 9A3. *b.* Defective amplifier assembly 9A4. *c.* Defective CX-10763/GRC-103(V) cable. *d.* Defective H-60/PT.	*a.* Replace telephone signal converter (app. A). *b.* Replace amplifier assembly 9A4 (app. A). *c.* Replace cable. *d.* Replace RT-773/GRC-103(V).
77	1,600-Hz tone is not heard in H-60/PT when RT-773/GRC-103(V) RING button is pressed but order wire communications are normal.	*a.* Defective telephone signal converter 9A3. *b.* Defective amplifier assembly 9A4. *c.* Defective CX-10763/GRC-103(V) cable.	*a.* Replace telephone signal converter (app. A). *b.* Replace amplifier assembly 9A4 (app. A). *c.* Replace cable.
78	RT-773/GRC-103(V) CALL indicator does not light and buzzer does not sound when distant terminal or repeater sends ring signal. Order wire communications are normal.	Defective RT-773/GRC-103(V).	Replace RT-773/GRC-103(V).
79	TD-754/G power indicator does not light and blower is not heard when PWR switch is operated to ON.	*a.* Defective power cable to TD-754/G. *b.* Defective 115 VAC fuse. *c.* Defective power supply assembly 12A1.	*a.* Check and replace if necessary. *b.* Replace. *c.* Replace.
80	Incorrect indication on TD-754/G TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at—	Adjustment of following front potentiometer required:	Adjust following front panel potentiometer:
	a. +12.	*a.* +12V.	*a.* +12V.
	b. +5.	*b.* +5V.	*b.* +5V.
	c. —6.	*c.* —6V.	*c.* —6V.
81	No indication on TD-754/G TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at—	Defective fuse as indicated below.	Replace with spare fuse indicated below.
	a. +12.	*a.* ¼A +12V.	*a.* ¼A.
	b. +5.	*b.* ½A +5V.	*b.* ½A.
	c. —6.	*c.* 1A —6V.	*c.* 1A.

Item No.	Symptom	Possible trouble	Corrective measure
82	Incorrect indication on TD-754/G TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at +28.	*a.* Defective 2A +28V fuse. *b.* Defective assembly 12A1.	*a.* Replace with 2A spare fuse. *b.* Replace assembly 12A1.
83	Incorrect indication on TD-754/G TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at REF.	*a.* Defective assembly 12A1. *b.* Defective monitor circuit.	*a.* Replace assembly 12A1. *b.* Higher category maintenance required.
84	Incorrect or no indication on TD-754/G TEST ALIGN meter with METER SELECT switch at +28, +5, or —6; adjustment or fuse replacement does not correct trouble.	Defective power supply assembly 12A1.	Replace.
85	Incorrect indication on TD-754/G TEST ALIGN meter with METER SELECT switch at TIM IN, PCM IN-1, or PCM IN-2 (24-channel).	Panel 12A4 defective	Replace panel 12A4.
86	Incorrect indication on TD-754/G TEST ALIGN meter with METER SELECT switch at CABLE CUR. CABLE CUR indicator lighted and buzzer sounds.	*a.* Cable current supply turned off due to temporary overload. *b.* Cable current adjustment required. c. Defective assembly 12A1.	*a.* Operate CABLE CURRENT switch to OFF and then to ON. *b.* Adjust CABLE CURRENT ADJ control for hairline indication. c. Replace assembly 12A1.
87	Incorrect indication on TD-754/G TEST ALIGN meter with METER SELECT switch at SERV FAC and SERV SEL switch at—	Following panel defective:	Replace following panel:
	a. RCC.	*a.* 12A2 or 12A5.	*a.* 12A2 or 12A5.
	b. A.	*b.* 12A4.	*b.* 12A4.
	c. B.	*c.* 12A4.	*c.* 12A4.
	d. C.	*d.* 12A4.	*d.* 12A4.
	e. D.	*e.* 12A4.	*e.* 12A4.
	f. E.	*f.* 12A5.	*f.* 12A5.
	g. F.	*g.* 12A5 or 12A6.	*g.* 12A5 or 12A6.
	h. G.	*h.* 12A6.	*h.* 12A6.
	i. H.	*i.* 12A6.	*i.* 12A6.
	j. J.	*j.* 12A6.	*j.* 12A6.
	k. K.	*k.* 12A6.	*k.* 12A6.
	l. L.	*l.* 12A6.	*l.* 12A6.
	m. M.	*m.* 12A2 or 12A3.	*m.* 12A2 or 12A3.
	n. N.	*n.* 12A2.	*n.* 12A2.
	o. O.	*o.* 12A2.	*o.* 12A2.
88	No order wire communications through cable link using TD-754/G. All other indications normal.	Defective panel 12A2	Replace panel 12A2.
89	No audible alarm on TD-754/G with TRAFFIC, CABLE CUR, or CALL indicator lighted.	Defective panel 12A1 or 12A3.	Replace panel 12A1 or 12A3.

Section III. ORGANIZATIONAL REPAIR PROCEDURES

4-8. Component Removal and Replacement

a. Removal.

(1) Operate the component AC POWER switch to OFF.

(2) Disconnect the component power cord from the associated power receptacle.

(3) Note and disconnect all cables, cords, and leads from the component.

(4) Loosen and remove the screws that secure the component to the equipment rack.

(5) Slide the component forward, out of the rack, and place it on the floor of the assemblage.

(6) If the component is to be replaced with another component, remove the screws that secure the mounting brackets to the sides of the component and remove the brackets.

(7) If the component is to be shipped or taken to another location, replace the cover and case associated with it.

b. Replacement.

(1) Mount the brackets removed from the original component (a(6) above) to the replacement component.

(2) If the replaced component lacks stacking pins, transfer the stacking pins from the replacement to the removed component.

(3) If the CV-1548/G is being replaced, transfer the handles from the replacement to the removed CV-1548/G.

(4) Slide the replacement component into position in the rack.

(5) Fasten the mounting brackets on the component to the equipment rack with the screws removed in a(4) above.

(6) If the replacement component is supplied with a cover, remove it.

(7) Connect the cables, cords, and leads removed from the original component to the replacement component.

(8) Turn on the component in accordance with the applicable procedures in chaper 3 and perform the applicable daily preventive maintenance procedures in paragraph 4-2 and the component technical manual (app. A).

4-9. Exhaust Blower Repairs (fig. 4-2)

Organizational repair of blowers is restricted to replacement of ac power cords and the blower motor and impeller.

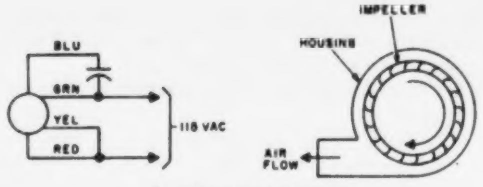
a. Operate the appropriate BLOWER switch to OFF.

b. Remove the defective power cord, blower motor, or impeller.

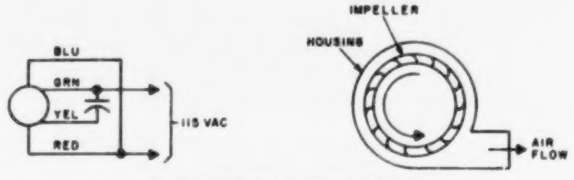
c. Refer to figure 4-2 to determine the correct connections for the required motor rotation and the required positioning of the impeller. Be sure that the concave portion of the impeller faces the airflow hole as indicated.

NOTE

If the replacement motor is provided with two mounting sides, install the motor so the capacitor side is facing the front wall.



A. CURBSIDE (CLOCKWISE)



B. ROADSIDE (COUNTERCLOCKWISE).

NOTE:
DIRECTION OF ROTATION IS VIEWED FROM MOTOR END OPPOSITE SHAFT

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Figure 4-2. Blower motor connection and impeller installation diagram.

4-10. Power Distribution Panel Repairs (fig. 4-3)

WARNING

Before performing any power distribution panel repairs, disconnect the power cable from the POWER 115V AC IN receptacle in the power entrance box.

a. Preliminary Procedures. Loosen the screws on the hinged cover of the power distribution panel and open the cover.

b. Removal and Replacement of Circuit Breaker.

(1) Grasp the defective circuit breaker and pull it straight out from the panel.

(2) Disconnect the wires connected to the circuit breaker.

(3) Connect the wires to the appropriate terminals of the replacement circuit breaker.

(4) Position the circuit breaker in the power distribution panel and firmly press it in place.

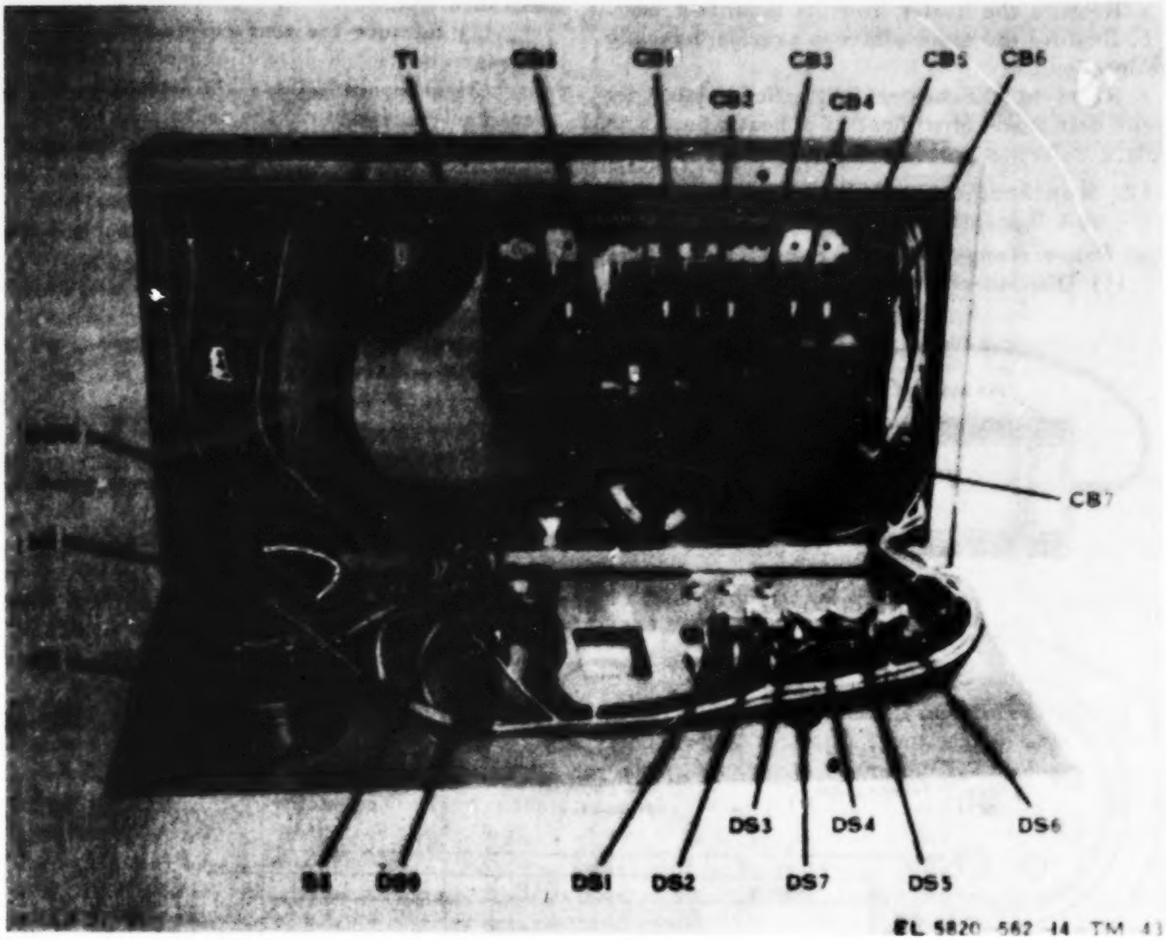


Figure 4-3. Power distribution panel, interior details.

c. Removal and Replacement of Current Transformer.

(1) Note and disconnect the black and white leads from the transformer terminals.

(2) Remove the nuts and washers that secure the current transformer inside the panel and remove the current transformer.

NOTE

Count the number of turns of heavy black wire through the center hole of the current transformer before proceeding to the next step.

(3) Disconnect the black wire that is wound around the current transformer from the MAIN circuit breaker and carefully unwind the wire.

CAUTION

Be sure that the number of turns around the replacement current transformer is the same as that on the original transformer.

(4) Wind the black wire around the replacement current transformer.

(5) Reconnect the black wire to the MAIN circuit breaker.

(6) Position the current transformer inside the panel and secure it with the original nuts and washer.

(7) Connect the black and white ammeter leads to the appropriate terminals of the transformer.

d. Removal and Replacement of Meters.

(1) Note the color and polarity of connections and remove the leads from the meter terminals.

(2) Remove the bolts that secure the meter to the panel and lift the meter out.

(3) Position the replacement meter in the panel and secure it with the original bolts.

(4) Connect the leads to the appropriate terminals of the replacement meter.

4-11. Heater Repairs

a. Remove the heater from its mounting base.

b. Remove the cover plates to provide access to the interior.

c. Refer to the heater instruction plates for circuit details and identification of heater parts and replace defective parts as authorized.

4-12. Replacement of Power Connectors and Receptacles

a. Power Receptacles.

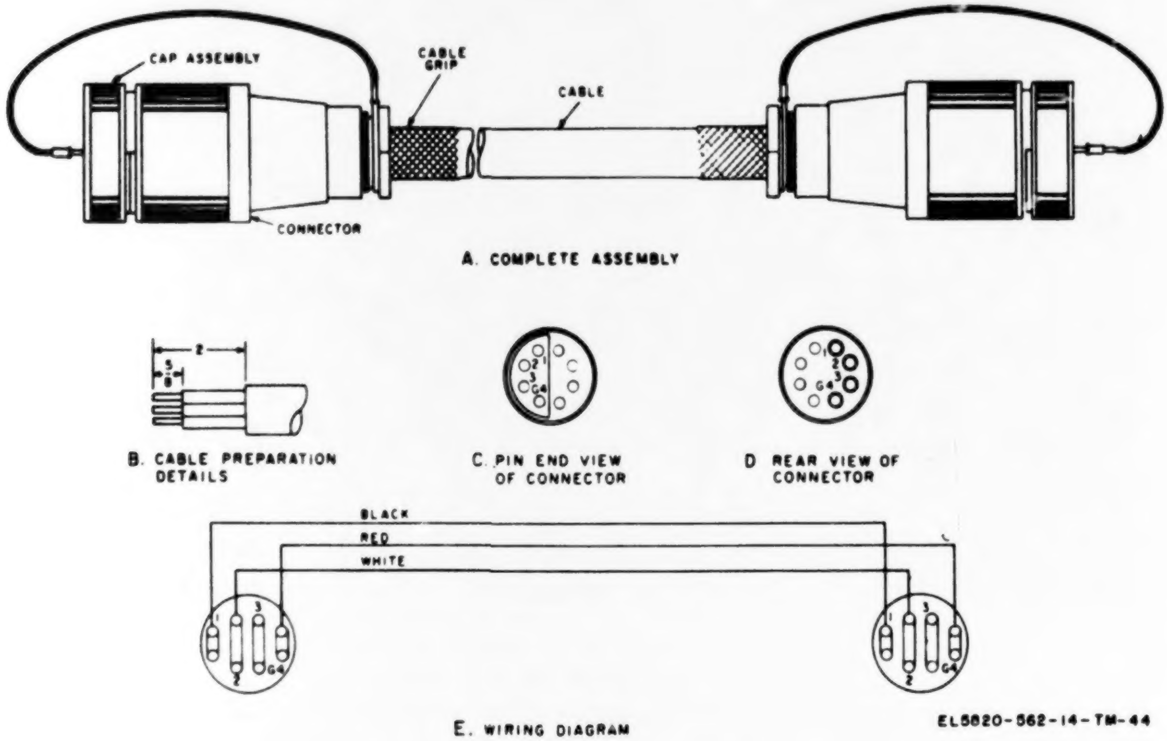
(1) Disconnect the ac power cable from the POWER 115V AC IN receptacle in the power entrance box.

(2) Remove the rear cover from the power entrance box.

(3) Disconnect the wires from the defective receptacle and remove the receptacle.

(4) Install the replacement receptacle, connect the wires, and replace the rear cover on the power entrance box.

b. Power Connectors. Refer to figures 4-4 and 4-5 for details of removal and replacement.



A. COMPLETE ASSEMBLY

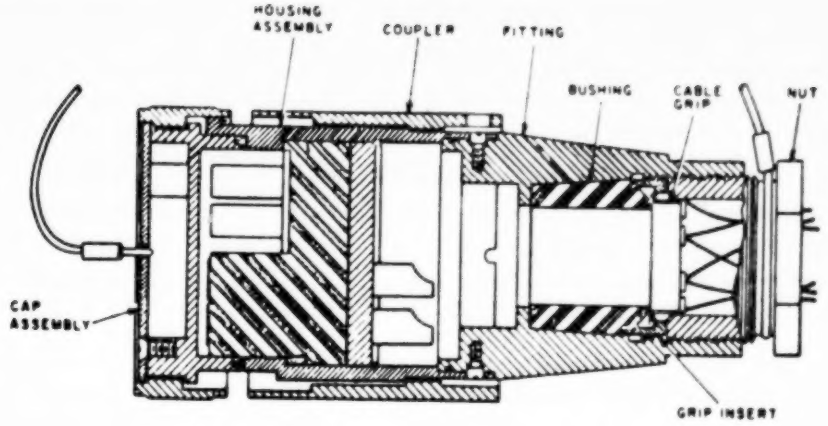
B. CABLE PREPARATION DETAILS

C. PIN END VIEW OF CONNECTOR

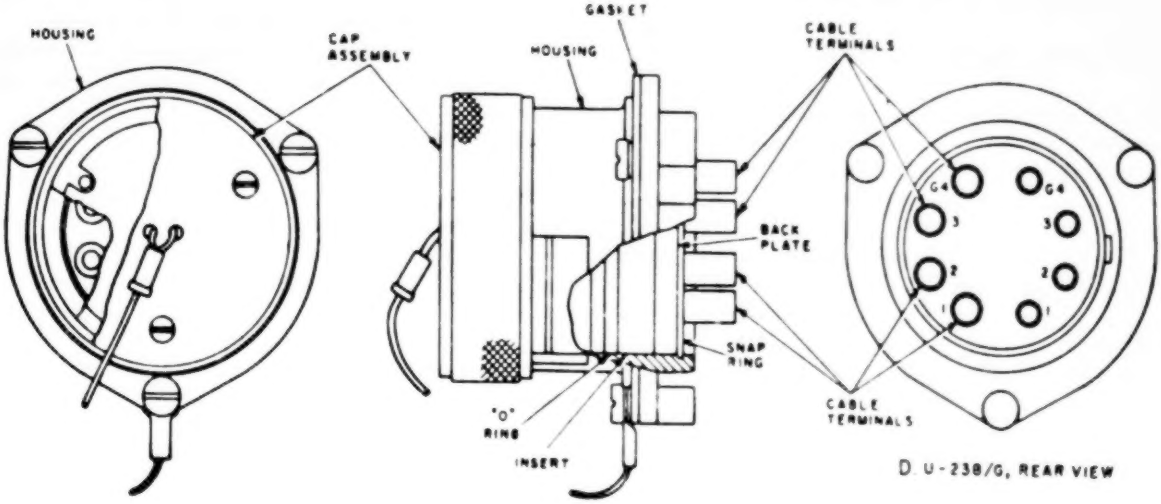
D REAR VIEW OF CONNECTOR

E. WIRING DIAGRAM

Figure 4-4. Power cable repair details.


HOUSING ASSEMBLY
COUPLER
FITTING
BUSHING
CABLE GRIP
NUT
CAP ASSEMBLY
GRIP INSERT

A. U-237/G, INTERIOR DETAILS


HOUSING
CAP ASSEMBLY
GASKET
HOUSING
CABLE TERMINALS
BACK PLATE
SNAP RING
"O" RING
INSERT
CABLE TERMINALS
G4
3
2
1
G4
3
2
1

B. U-238/G, EXTERIOR VIEW

C. U-238/G, INTERIOR DETAILS

D. U-238/G, REAR VIEW

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Figure 4-5. Power cable connector and power receptacle assembly details.

Section IV. DS AND GS MAINTENANCE

4-13. Scope of Direct Support and General Support Maintenance

a. General. Direct and general support maintenance consists entirely of corrective maintenance procedures as indicated in the maintenance allocation chart (app. B).

b. Tools and Test Equipment Required. The tools and test equipment required for direct and general support maintenance of the AN/TRC-113 are listed in section III of the maintenance allocation chart (app. B).

4-14. Direct Support Repair Procedures

a. Communications Equipment Repair. Refer to the applicable technical manual (app. A) for instructions in performing direct support maintenance of the TD-204/U, AN/GRC-103(V), LS-147C/FI, and TA-312/PT.

b. Shelter, Electrical Equipment S-335/TRC-113 Repairs. Direct support repair of the S-335/TRC-113 includes the following:

(1) Emergency repair of holes and minor structural damage to the shelter facility.

(2) Removal and replacement of the door handle and latchbolt assemblies, entrance door filter, and cover assemblies and gaskets for the blower vents and the entrance boxes.

4-15. General Support Repair Procedures

a. Communications Equipment Repair. Refer to the applicable technical manual (app. A) for instructions on performing general support maintenance on the communications equipment in the assemblage.

b. Shelter Electrical Equipment S-335/TRC-113. Repair of the S-335/TRC-113 includes replacement of doors and skids, and permanent repair of holes and major structural damage to the shelter facility. Refer to TB 750-240 for further information on general support maintenance of the shelter facility.

CHAPTER 5
SHIPMENT, LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

5-1. Disassembly of Equipment

Perform the following procedures when the AN / TRC-113 is moved to a different location or placed in storage.

a. Preparing Assemblage.

(1) Turn off all equipment power switches and circuit breakers except the FLUORESCENT LIGHTS switch and the LIGHTS and MAIN circuit breakers.

(2) Secure all components in their cases, racks, mountings, or holders.

(3) Place all miscellaneous items in storage drawers and compartments and secure the drawers and compartments for transit.

(4) Remove the batteries from the TA-312 / PT and the flashlight for prolonged storage or for long distance shipment.

(5) Disconnect the pcm cables and RF cables from the antenna and video entrance boxes. Close and secure the covers.

(6) If power was obtained from a generator set, proceed as follows:

(a) Stop the generator set.

(b) Disconnect the power cable from the POWER 115V AC IN receptacle on the power entrance box. Replace both connector covers.

(c) Disconnect the power cable from the generator set. If the power cable stub was used, disconnect it from the power cable, replace the covers, wind the cable on the cable reel, and then wind the cable stub on the cable reel.

(7) If power was obtained from a commercial power source, proceed as follows:

(a) Turn off or disconnect the power.

(b) Disconnect the power cable from the POWER 115V AC IN receptacle on the power entrance box.

(c) Disconnect the power cable stub from the power source and from the power cable. Replace the covers, wind the power cable on the cable reel, and then wind the cable stub on the cable reel.

(8) Disconnect the ground strap from the ground terminal in the power entrance box. Close and secure the cover on the POWER ENTRANCE BOX.

(9) Disconnect the ground strap from the generator set (if used) and from the ground rods. Store the ground straps in the storage compartments.

(10) Close and secure the covers on the EXHAUST BLOWER vents and the air filter on the door.

(11) If an air conditioner was installed, disconnect the air conditioner hoses (fig. 2-24), remove the air conditioner hardware (fig. 2-23), and secure the covers on the air conditioner ducts (fig. 1-1).

(12) Remove the ground rod and secure it (fig. FO-2).

(13) Recheck the area for loose items. If a generator set was used to supply power, prepare it for shipment or limited storage as described in the appropriate technical manual.

(14) Secure the power cable reel in the generator set trailer (fig. 1-7).

(15) Secure the boarding ladder in place on the floor (fig. FO-2).

(16) Clean the shelter facility thoroughly. Make sure that the drain plug is tightly closed.

NOTE

If the assemblage is to be transported by aircraft, loosen the drain plug to insure equalization of pressure during transportation.

(17) Close and lock the door.

(18) If the AN / TRC-113 is truck-mounted, secure the tailgate in the upright position.

b. Lowering Mast.

(1) Unlock the azimuth plate, and use the strap wrench to rotate the mast so that the yellow stripe on the mast and the 0 degree mark on the azimuth plate are at the front of the launcher.

(2) Slacken the upper guy wires by unlocking the snubber and releasing approximately 6 inches of wire to permit some free vertical movement of the mast.

WARNING

If the wind is strong, station at least one man to hold the windward upper guy to maintain adequate tension to keep the mast vertical while it is being lowered.

(3) Unpin the jacking lever from its stored position, and pin it in the clevis on the operating rod of the lower brake ring.

(4) Set the brake control levers so that the arrows point upward. Using short strokes of the jacking lever, raise the mast until the joint between the lowest and next lowest mast section is in line with the horizontal yellow stripe on the launcher leg.

(5) Depress the catch in the upper end of the lowest mast section, and rotate the mast section through one-twelfth of a turn, left or right. Disengage the lowest mast section from the next lowest, and withdraw it from the launcher.

(6) Set the brake control levers so that the arrows point downward. Using full strokes of the jacking lever, lower the mast until the joint between the next pair of mast sections is in line with the horizontal stripe on the launcher. Repeat the procedure in (5) above.

(7) Repeat the procedure in (6) above until the guy attachment ring is approximately 18 inches above the top plate of the launcher. Disconnect Cable Assembly RF CG-3443/U (50 ft) from Adapter, Connector UG-1375/U, and unsnap the cable grip. Unsnap the white-coded guy wires, and remove the guy attachment ring.

c. Disassembly of Launcher and Antenna.

(1) Set the brake control levers so that the arrows point upward.

(2) Loosen the red-coded guy wires, and unsnap them from the top plate of the launcher.

(3) Remove the pin from the clevis on the operating rod of the lower brake ring, and move the jacking lever to the stored (vertical) position. Wrap the chain around the operating arm hinged to the top of the jacking lever, and insert the pin to lock the lever in the stored position.

(4) Grasp the launcher climbing steps, and raise the launcher a few inches; then rotate it through 90 degrees so that the lower climbing step rests in its catch on the base plate. Check to see that the outer telescoping tube of the launcher has been stopped by the loading catch on the base plate.

(5) Rock the launcher to loosen the spikes holding the base plate to the ground. Remove the spikes.

(6) Tilt the launcher sufficiently to permit removal of the antenna. Remove the antenna.

(7) Disconnect Cable Assembly RF CG-3444/U (1 ft 6 in.) from the dipole connector and Adapter, Connector UG-1375/U.

(8) Release the catch in the upper end of the mast section that remains in the launcher, rotate the reflector attachment assembly, and lift it out of the mast section.

d. Packing Mast Assembly.

(1) Set the female end of a mast section over the cap on the underside of the top plate of the launcher, and drop its male end over the corresponding cap on the base plate. Repeat this procedure with the other five mast sections until there is a total of seven mast sections in the launcher (one in the erection mechanism and six around it).

(2) Release the loading catch on the base plate of the launcher, which will telescope an additional ¾ inch, and lock the stored mast sections in position. Lower the mast section remaining in the erection mechanism by manually operating the brake rings until the mast section seats in the azimuth plate rotating the azimuth plate if necessary.

(3) Swing the retaining clip on the top of the mast assembly over the top of the mast section stored in the erection mechanism.

(4) Snap the binding wires to their lugs at the top of the mast assembly, and tighten each of the canvas straps around a pair of binding wires.

(5) Secure the mast assembly in the generator set trailer (fig. 1-7).

e. Packing Accessories Kit.

(1) Gather up all the guy wires, the guy attachment ring, and the guy stakes, spikes, and tools. The accessories kit should contain the items shown in 2 through 9, figure 2-5. Secure the guy attachment ring by snapping the snaphook of one guy wire through it, wind all guy wires on the snubber brackets, and stow all accessories in the waterproof bag.

(2) Fasten the bag and secure it in the generator set trailer (fig. 1-7).

5-2. Repackaging for Shipment or Limited Storage

Repackaging the AN/TRC-113 for shipment or limited storage normally will be performed at a packaging facility or by a packaging team. If emergency packaging is required, select materials from those listed in SB-100. Package the AN/-TRC-113 in accordance with the original packaging so far as possible with available materials.

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

5-3. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures outlined in paragraph 5-4 will be used to prevent further use of the AN / TRC-113.

5-4. Methods of Destruction

Use any or all of the following methods to destroy the AN / TRC-113:

a. Smash. Smash the controls, tubes, coils, relays, switches, capacitors, transformers, and meters.

b. Cut. Cut all cables and cords and slash the wiring on the components.

WARNING

> Be extremely careful when handling explosives and incendiary devices. Use these items only when the need is urgent.

c. Burn. Burn cords and technical manuals.

d. Bend. Bend panels, components, and cabinets.

e. Explode. Use explosives if necessary.

f. Dispose. Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into streams or lakes.

APPENDIX A

REFERENCES

The following publications contain information applicable to the operation and maintenance of Repeater Set, Radio AN/TRC-113.

DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms.
DA Pam 738-750	The Army Maintenance Management System (TAMMS).
SB 11-6	FSC Class 6135; Primary Battery Supply Data.
SB 11-30	FSC Class 6135; Primary Battery Management Data.
SB 11-573	Painting and Preservation of Supplies Available for Field Use for Electronics Command Equipment.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TB 43-0118	Field Instructions for Painting and Preserving Electronic Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 5-6115-365-15	Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual (Including Repair Parts and Special Tools List): Generator Sets, Gasoline and Diesel Engine Driven, Trailer Mounted, PU-236A/G, PU-236/G (NSN 6115-00-393-1709), PU-236B/G (6115-00-738-6334), PU-253A/U, PU-253/U (6115-00-697-2402), PU-304C/MPQ-4 (6115-00-056-8421), PU-332/G (6115-00-577-8471), PU-332A/G (6115-00-738-8336), PU-375A/G, PU-375/G (6115-00-753-2231), PU-375B/G (6115-00-931-6789), PU-401/M (6115-00-823-2217), PU-402/M (6115-00-722-3760), PU-406/M (6115-00-738-6342), PU-409/M (6115-00-702-3343), PU-409A/M (6115-00-733-6338), PU-495/G (6115-00-823-2218), PU-551G (6115-00-889-1307), PU-564 A/G (6115-00-728-6341), PU-564B/G (6115-00-179-2789), PU-617/M (6115-00-738-6335), PU-618/M (6115-00-738-6337), PU-619/M (6115-00-738-6339), PU-620/M (6115-00-738-6340), PU-625/G (6115-000-837-3915), PU-628/G (6115-00-087-0873), PU-629/G (6115-00-937-5555), PU-631/G (6115-00-059-5172), PU-656/G (6115-00-939-3296) and PU-650B/G (6115-00-258-1622).
TM 11-2057A	Test Set TS-27B/TSM.
TM 11-5805-201-12	Operator and Organizational Maintenance Manual: Telephone Set TA-312/PT (NSN 5805-00-543-0012).
TM 11-5805-201-20P	Organizational Maintenance Repair Parts and Special Tools Lists for Telephone Set TA-312/PT (NSN 5805-00-543-0012).
TM 11-5805-201-34P	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for for Telephone Set TA-312/PT (NSN 5805-00-543-0012).
TM 11-5805-201-35	Direct Support, General Support, and Depot Maintenance Manual (Including Repair Parts and Special Tools List): Telephone Set TA-312/PT (NSN 5805-00-543-0012) TO 31W1-2PT-282).
TM 11-5805-367-12	Operator's and Organizational Maintenance Manual: Multiplexers TD-202/U (NSN 5805-00-884-2176), TD-203/U (5805-00-884-2177), TD-204/U (5805-00-900-8200), TD-352/U (5805-00-900-8199) and TD-353/U (5805-00-985-9153); Restorers, Pulse Form TD-206/G (5805-00-868-8078) and TD-206B/G (5805-01-020-2251) and Converters, Telephone Signal CV-1548/G (5805-00-069-8795) and CV-1548A/G (5805-00-069-8795).
TM-11-5805-383-20P	Organizational Maintenance Repair Parts and Special Tools Lists for Multiplexer TD-754/G (NSN 5805-00-930-8078).
TM 11-5805-383-34P	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Multiplexer TD-754/G (NSN 5820-00-930-8078).
TM 11-5805-383-35	Direct Support, General Support and Depot Maintenance Manual for Multiplexer, TD-754/G (NSN 5820-00-830-8078).

TM 11-5820-540-12	Operator's and Organizational Maintenance Manual: Radio Set, AN/GRC-103(V)1 (NSN 5820-00-935-4931), AN/GRC-103(V)2 (5820-00-116-6029), AN/GRC-103(V)3 (5820-00-116-6030), AN/GRC-103(V)4 and Extension Kit, Mast, MK-1009/GRC-103(V) (5985-00-179-7767).
TM 11-5820-540-20P	Organizational Maintenance Repair Parts and Special Tools Lists for Radio Sets, AN/GRC-103(V)1 (NSN 5820-00-935-4931), AN/GRC-103(V)2 (5820-00-116-6029), AN/GRC-103(V)3 (5820-00-116-6030) A and B Models; Extension Kit, Mast, MK-1009/GRC-103(V) and Direct Support Cable Kit (5820-00-935-5076).
TM 11-5820-540-34P-1	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Radio Set AN/GRC-103(V)1 (NSN 5820-00-935-4931): Mast Extension Kit and Direct Support Cable Kit.
TM 11-5820-540-34P-1-1	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Radio Set, AN/GRC-103(V)1 A Model (NSN 5820-00-935-4931) Mast Extension Kit and Direct Support Cable Kit.
TM 11-5820-540-34P-2	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Radio Set AN/GRC-103(V)2 (NSN 5820-00-116-6029).
TM 11-5820-540-34P-2-1	Direct Support and General Support Maintenance Repair Parts and Special Tools for Radio Set AN/GRC-103(V)2, A Model (NSN 5820-00-116-6029): Mast Extension Kit and Direct Support Cable Kit.
TM 11-5820-540-34P-3	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Radio Set AN/GRC-103(V)3 (NSN 5820-00-116-6030).
TM 11-5820-540-34P-3-1	Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Radio Set, AN/GRC-103(V)3, A Model (NSN 5820-00-116-6030) Mast Extension Kit and Direct Support Cable Kit.
TM 11-5820-540-40-1	General Support Maintenance Manual for Radio Sets, AN/GRC-103(V)1 (NSN 5820-00-935-4931), AN/GRC-103(V)2 (5820-00-116-6029), AN/GRC-103(V)3 (5820-00-116-6030), AN/GRC-103(V)4 (5820-01-081-8866) and Extension Kit, Mast, MK-1009/GRC-103(V) (5985-00-179-7767).
TM 11-5820-540-40-3	General Support Maintenance Manual for Radio Sets, AN/GRC-103(V)1 (NSN 5820-00-935-4931), AN/GRC-103(V)2 (5820-00-116-6029), AN/GRC-103(V)3 (5820-00-116-6030), AN/GRC-103(V)4 (5820-01-081-8866), and Extension Kit, Mast, MK-1009/GRC-103(V) (5985-00-179-7767).
TM 11-5830-221-12	Operator's and Organizational Maintenance Manual: Intercommunications Stations LS-147A/FI, LS-147B/FI, LS-147C/FI, and LS-147D/FI (NSN 5830-00-752-5357).
TM 11-5830-221-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists for Telecommunication Station LS-147C/FI (NSN 5830-00-752-5357).
TM 11-5830-221-35	Field and Depot Maintenance Manual: Intercommunication Stations LS-147A/FI, LS-147B/FI, LS-147C/FI, and LS-147D/FI.
TM 11 5935-205-14P	Operator's Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Connectors, Receptacle, Electrical U-187/G and U-187A/G (FSN 5935-682-0381).
TM 11-6625-648-12	Operator's and Organizational Maintenance Manual: Test Set, Telephone AN/PTM-7 (NSN 6625-00-902-7574).

TM 11-6625-648-24P	Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Test Set, Telephone, AN/PTM-7 (NSN 6625-00-902-7574).
TM 11-6625-648-45	General Support and Depot Maintenance Manual: Test Set, Telephone, AN/PTM-7 (NSN 6625-00-902-7574).
TM 740-90-1	Administrative Storage of Equipment.
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations for Radio Repeater Sets. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

B-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C—Operator/Crew
O—Organizational
F—Direct Support
H—General Support
D—Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4. Tool and Test Equipment Requirements (Sect. III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

B-5. Remarks (Sect. IV)

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

(Next printed page is B-3)

SECTION II MAINTENANCE ALLOCATION CHART FOR

RADIO REPEATER SET AN/TRC-113(V)1

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	RADIO REPEATER SET AN/TRC-113(V)1, AN/TRC-113(V)2, AN/TRC-113(V)3, AN/TRC-113A(V)1, AN/TRC-113A(V)2, AN/TRC-113A(V)3	Inspect	0.3						
		Test	0.2						A
		Test		0.2				6	B
		Test			0.5			6	B
		Test				1.7		6	B
		Service	0.3						C
		Service		0.5				3	
		Adjust		0.2				6	D
		Adjust			0.5			6	D
		Adjust				1.5		6	
		Repair	0.3						E
		Repair		0.4				6	E
		Repair			0.8			6	
		Repair				2.0		6	
		Overhaul				300.0		6	F
		Rebuild					400.0	6	F
01	SHELTER, FACILITY S-335/TRC-113	Inspect	0.2						
		Test		0.3				1	G
		Test				2.0		2	H
		Service		0.4				3	
		Repair		0.4				3	I
		Repair			0.8			5	I
		Repair				2.0		4,5	
		Rebuild					100.0	4,5	
0101	SHELTER, ELECTRICAL EQUIPMENT, S-250/G	Repair			5.0			5	J
02	MULTIPLEXER SET TD-204/U, OR	Repair							K
	MULTIPLEXER TD-754/G	Repair							L
03	RADIO SET AN/GRC-103(V)1, AN/GRC-103(V)2, OR AN/GRC-103(V)3	Repair							M
04	BLOWER EXHAUST	Test		0.2				1	
		Replace			0.8			3	
		Repair		0.3				3	N
05	INTERCOMMUNICATIONS STATIONS LS-147C/FI	Repair							O
06	TELEPHONE SET TA-312/PT	Repair							P
07	INTERNAL CABLE ASSEMBLIES	Repair			1.0			3	Q
		Replace		0.3	3.0			3	
		Test			8.0			1,3,5	
08	EXTINGUISHER, FIRE	Inspect	0.2						
		Replace							R
09	HEATER, ELECTRICAL	Repair							S

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR

RADIO REPEATER SET AN/TRC-113(V)1

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O,F,H,D	MULTIMETER AN/USM-223	6625-00-999-7465	
2	H,D	OHMMETER ZM-21A/U	6625-00-643-1030	
3	O,F	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
4	H,D	TOOL KIT, ELECTRONIC EQUIPMENT SHELTER TK-144/G	5180-00-973-4369	
5	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-00-605-0079	
6	O,F,H,D	TOOL & TEST EQUIPMENT ASSOCIATED WITH COMPONENTS OF THIS END ITEM		
		NOTE DEPOT MAY USE ANY OTHER EQUIPMENT REQUIRED TO OVERHAUL OR REBUILD THIS EQUIPMENT.		

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	SYSTEM OPERATIONS USING BUILT-IN FACILITIES.
B	TEST IN ACCORDANCE WITH COMPONENT MAINTENANCE ALLOCATION CHART (MAC).
C	PREVENTIVE MAINTENANCE.
D	ADJUST IN ACCORDANCE WITH COMPONENT MAC.
E	REPAIR IN ACCORDANCE WITH COMPONENT MAC.
F	BY COMPONENT SHELTER FACILITY ONLY.
G	CONTINUITY OF POWER, LIGHTING AND SIGNAL CIRCUITS.
H	ALL TESTS.
I	POWER, LIGHTING AND SIGNAL WIRING EXCEPT SIDES AND DOORS.
J	SEE TB 43-0124.
K	SEE TM 11-5805-367-12.
L	SEE TM 11-5805-383-12.
M	SEE TM 11-5820-540-12.
N	REPLACE MOTOR AND IMPELLER.
O	SEE TM 11-5830-221-12.
P	SEE TM 11-5805-201-12.
Q	REPAIR OF CABLE CONSISTS OF REPLACEMENT OF THE SHORTENED CABLE WIRE WITH A LONGER ONE OR REPLACEMENT OF CABLE CONNECTORS.
R	CORPS OF ENGINEER.
S	USAMEC RESPONSIBILITY.

APPENDIX C
ORGANIZATIONAL, DS, GS, AND DEPOT REPAIR PARTS

Section I. INTRODUCTION

C-1. Scope

This appendix contains a list of repair parts required for the performance of organizational maintenance and a list covering the corresponding requirements for direct support, general support, and depot maintenance for the AN/TRC-113.

NOTE

No special tools, test, and support equipment are required.

C-2. General

The repair parts list is divided into the following sections:

a. Repair Parts for Organizational Maintenance, Section II. A list of repair parts authorized for the performance of maintenance at the organizational level.

b. Repair Parts for Direct Support, General Support and Depot Maintenance, Section III. A list of repair parts authorized for the performance of maintenance at the direct support, general support, and depot maintenance level.

c. Index—Federal Stock Number and Reference Number Cross-Reference to Figure and Item Number or Reference Designation Section IV. A list of Federal stock numbers in ascending numerical sequence, cross-referenced to the figure number and reference designation.

d. Index—Reference Designation Cross-Reference to Page Number Section V. A list of reference designations cross-referenced to page numbers.

C-3. Explanation of Columns

The following provides an explantion of columns in the tabular list:

a. Source, Maintenance, and Recoverability Codes (SMR).

(1) Source codes indicate the selection status and source for the list item. Source codes are—

Code	*Explanation*
P—	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system and authorized for use at indicated maintenance categories.
P2—	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
P9—	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army COMSEC logistic system, and which are not subject to the provisions of AR 380-41.
P10—	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380-41, and which are stocked and supplied by the Army COMSEC logistic system.
M—	Repair parts which are not procured or stocked, but are to be manufactured at indicated maintenance levels.
A—	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories.
X—	Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.
X1—	Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.
X2—	Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned, with accompanying justification, through normal supply channels.
G—	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DS and GS category or returned to depot supply category.

(2) Maintenance codes indicate the lowest category of maintenance authorized to install the listed item. The maintenance level codes are—

Code	*Explanation*
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance

Code	*Explanation*
H	General support maintenance
D	Depot maintenance

(3) Recoverability codes indicate whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are—

Code	*Explanation*
R-	Repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.
S-	Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.
T—	High-dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.
U –	Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high-dollar value reusable casings or castings.

b. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description. Indicates the Federal item name and any additional description of the item required. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of Measure (U / M). A two-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit. Indicates the quantity of the item used in AN / TRC-113.

f. Allowances (15-Day Organizational Maintenance).

(1) The repair parts indicated by an asterisk in the allowance column represent those authorized for use at the organizational category, and will be requisitioned on an "as required" basis, until stockage is based on demand in accordance with AR 710-2.

(2) Major Army commanders are authorized to approve reduction in the range of support items authorized for use in units within their commands. Recommendations for increase in range of items authorized for use will be forwarded to the Commander, US Army Electronics Command, ATTN: AMSEL-MA-CW, Fort Monmouth, NJ 07703. Any changes approved will be reflected in a revision to the RPSTL.

g. 30-Day DS / GS Maintenance Allowances. The repair parts indicated by asterisk entries in separate allowance columns for DS and GS represent those authorized for use at the category of maintenance to be requisitioned on an "as required" basis, until stockage is based on demand in accordance with AR 710-2.

h. One Year Allowances per 100 Equipments / Contingency Planning Purposes. Items to be requisitioned as required until demand data is requested.

i. Depot Maintenance Allowance Per 100 Equipments. This column indicates that the items identified with an asterisk are authorized to be requisitioned as required.

j. Illustrations.

(1) *Figure number.* Indicates the figure number in which the item is shown.

(2) *Item number or reference designation.* Indicates the reference designation used to identify the item in the illustration.

C-4. Location of Repair Parts

a. This appendix contains two cross-reference indexes (sect. IV and V) to be used to locate a repair part when either the Federal stock number or reference designation is known. The first column in each index is prepared in numerical or alphanumeric sequence in ascending order.

b. When the Federal stock number is known, follow the procedures given in (1) and (2) below.

(1) Refer to the index of Federal stock numbers (sec. IV) and locate the Federal stock number. The FSN is cross-referenced to the applicable figure and reference designation.

(2) When the reference designation is determined, refer to the reference designation index (sec. V). The reference designations are listed in alphanumeric ascending order and are cross-referenced to the page number on which they appear in the repair parts lists (sec. II and III). Refer to the page number noted in the index and locate the reference designation in the repair parts list (col. 7b or col. 10b).

c. When the reference designation is known, follow the procedures given in *b* (2) above.

d. When neither the FSN nor reference designation is known, identify the part in the illustration and follow directions given in *c* above; or scrutinize column 3 of the repair parts lists (secs. II and III).

C-5. Federal Supply Codes

This paragraph lists the Federal supply code with the associated manufacturer's name.

Code	*Manufacturer*
08806	General Electric Co. Miniature Lamp Dept.
09922	Burndy Corp.
21873	Slater Electric, Inc.
23404	Callboy Company
24446	General Electric Co.
24455	General Electric Co., Lamp Div of Consumer Products Group
71102	Boston Insulated Wire and Cable Co.
72619	Dialight Corp.
74545	Hubbell Harvey, Inc.

Code	
75582	Leviton Mfg. Co.
79405	Wood Electric Corp.
80063	Army Electronics Command Procurement & Production Div.
81349	Mil Spec Prom by Stand. Div.
81831	Filtron Co., Inc.
90211	Square D Co.
91737	Gremer Mfg. Co., Inc.
91929	Honeywell Inc.
93993	Midwest Electric Products, Inc.
96906	Military Standards Prom by Standardization Div.

SECTION II. REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATIONS (a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
	5820-868-8211	RADIO REPEATER SET AN/TRC-113 (This item is nonexpendable)									
		SHELTER, ELECTRICAL EQUIPMENT S-335/TRC-113									
P-O--	6625-854-6787	AMMETER MR36W100ACAAR (81349)		EA	1	•	•	•	•	5-2	M2
P-O--	5920-930-2307	ARRESTER, LIGHTNING, MTD IN VIDEO ENT BOX SC-B-547223 (80063)		EA	6	•	•	•	•		
P-C--	5110-293-2339	AXE, SINGLE BIT SC-C-539451 (80063)		EA	1	•	•	•	•		
P-O--	6250-804-3449	BALLAST, LAMP, F/FLUORESCENT 8904570 (08806)		EA	5	•	•	•	•		
P-O--	4510-595-4085	BRACKET, F/FIRE EXTINGUISHER SC-C-539468 (80063)		EA	1	•	•	•	•		
P-C--	7520-281-5917	BASKET WASTEPAPER SC-D-539454 (80063)		EA	1	•	•	•	•		
P-O--	5925-703-6084	BREAKER, CIRCUIT QO-250 (90211)		EA	1	•	•	•	•	5-2	CB8
P-O--	5925-583-7941	BREAKER, CIRCUIT QO-120 (90211)		EA	1	•	•	•	•	5-2	CB6
P-O--	5925-815-6657	BREAKER, CIRCUIT QO-1515 (90211)		EA	2	•	•	•	•	5-2	CB3, CB7
P-O--	5925-818-4811	BREAKER, CIRCUIT QO-115 (90211)		EA	4	•	•	•	•	5-2	CB1, CB2, CB4, CB5
P-O--	5925-681-4952	BREAKER, CIRCUIT 105-210-101 (79405)		EA	1	•	•	•	•	5-2	CB9
P-C--	7920-178-8315	BRUSH, DUSTING, BENCH SC-C-539469 (80063)		EA	1	•	•	•	•		
P-O--	6145-945-1864	CABLE, POWER, ELECTRICAL 4158R004 (71108)		FT	40	•	•	•	•		
P-O--	6145-660-8711	CABLE, RADIOFREQUENCY RG-8A/U		FT	10	•	•	•	•		
P-O--	6145-161-0913	CABLE, RADIOFREQUENCY RG-62A/U		FT	150	•	•	•	•		
P-O--		CABLE, RADIOFREQUENCY SC-C-547168 (80063)		FT	40	•	•	•	•		
P-C--	5995-926-7831	CABLE ASSEMBLY, POWER, ELECTRICAL CX-7453A/U 100 FT LG		EA	1	•	•	•	•		
P-O--	5940-283-5393	CAP, ELECTRICAL, F/U-106/U SC-C-76202-1 (80063)		EA	4	•	•	•	•		
P-O--	5935-1338713	CAP, ELECTRICAL CONNECTOR CW-282A/U		EA	62	•	•	•	•		
P-C-R	6645-800-7094	CLOCK, AIRCRAFT, MECHANICAL SC-C-539475 (80063)		EA	1	•	•	•	•		
P-O--	5935-660-4302	CONNECTOR, PLUG, ELECTRICAL UG-573B/U		EA	3	•	•	•	•		
P-O--	5935-837-5966	CONNECTOR, PLUG, ELECTRICAL UG-710B/U		EA	3	•	•	•	•		
P-O--	5935-636-7145	CONNECTOR, PLUG, ELECTRICAL UP-121/M		EA	9	•	•	•	•		
P-O--	5935-771-2262	CONNECTOR, PLUG, ELECTRICAL MS-3116F12-10P (96906)		EA	5	•	•	•	•		
P-O--	5935-405-9232	CONNECTOR, PLUG, ELECTRICAL MS-3116F12-8P (96906)		EA	5	•	•	•	•		
P-O--	5935-134-5646	CONNECTOR, RADIOFREQUENCY UG-1375/U		EA	3	•	•	•	•		
P-O--	5935-045-9832	CONNECTOR, RECEPTACLE, ELECTRICAL U-187A/G F/SIGNAL CABLES		EA	2	•	•	•	•		

SECTION II. REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE (CONTINUED)

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW				(7) ILLUSTRATIONS	
						(a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
P-O--	5935-064-5732	CONNECTOR, RECEPTACLE, ELECTRICAL U-238B/G		EA	2	•	•	•	•	5-2	J1, J2
P-O--	5905-968-4885	CONNECTOR, RECEPTACLE, ELECTRICAL UG-260E/U		EA	62	•	•	•	•		
P-O--		CONNECTOR, RECEPTACLE, ELECTRICAL MS-3116F12-8S (96906)		EA	6	•	•	•	•		
P-O--	5935-947-2925	CONNECTOR, RECEPTACLE, ELECTRICAL, MTD IN VEDIO ENT BOX; MALE ES-C-1942390r2 (80063)		EA	3	•	•	•	•		
P-O--	5935-947-2925	CONNECTOR, RECEPTACLE, ELECTRICAL, MTD IN VEDIO ENT BOX; FEMALE ES-C-1942400r2 (80063)		EA	3	•	•	•	•		
P-O--	5935-762-1495	CONNECTOR, RECEPTACLE, ELECTRICAL MS-3116F12-10S (96906)		EA	6	•	•	•	•		
P-O--		CONNECTOR, RECEPTACLE, ELECTRICAL MS-3116F8-3S (96906)		EA	6	•	•	•	•		
P-O--	5935-949-5244	CONNECTOR, RECEPTACLE, ELECTRICAL, MTD IN VEDIO ENT BOX; MALE 13739 (91737)		EA	14	•	•	•	•		
P-O--	5935-930-1210	CONNECTOR, RECEPTACLE, ELECTRICAL, MTD IN VEDIO ENT BOX; FEMALE 13738 (91737)		EA	14	•	•	•	•		
P-O--	5935-982-9711	CONNECTOR, RECEPTACLE, ELECTRICAL 5261 (74545)		EA	1	•	•	•	•	5-2	J17
P-O--	5935-484-5033	CONNECTOR, RECEPTACLE, ELECTRICAL PT06B-12-3S (09922)		EA	3	•	•	•	•		
P-O--	5935-283-4003	CONNECTOR, RECEPTACLE, ELECTRICAL 5262 (74545)		EA	10	•	•	•	•	5-2	J3, J4, J6, J10 thru J16
P-O--	5935-933-3454	CONNECTOR, RECEPTACLE, ELECTRICAL 5361 (74545)		EA	2	•	•	•	•	5-2	J5, J9
P-O--	5975-947-3068	COVER, ELECTRICAL, F/J3 MTD IN PWR ENT BOX M3780-PS (21873)		EA	1	•	•	•	•		
P-C-R	4210-270-4512	EXTINGUISHER, FIRE SC-C-539382 (80063)		EA	1	•	•	•	•		
P-C--	5120-293-2696	EXTRACTOR, ELECTRON TUBE, F/7 PIN SC-B-539547 (80063)		EA	1	•	•	•	•		
P-C--	5120-293-2692	EXTRACTOR, ELECTRON TUBE, F/9 PIN SC-B-539548 (80063)		EA	1	•	•	•	•		
P-O--	5910-850-4412	FILTER, POWER SP-289 (81831)		EA	2	•	•	•	•	5-2	FL1, FL2
P-O--	5910-553-6096	FILTER, POWER, F/FLOURESCENT SC-C-33033-4 (80063)		EA	5	•	•	•	•	5-2	FL5 thru FL9
P-C--	5120-946-5148	GRIP, CABLE, JAW, SIGNAL SC-B-539592 (80063)		EA	2	•	•	•	•		
P-C--	5120-946-5114	GRIP, CABLE, JAW, POWER SC-B-539593 (80063)		EA	1	•	•	•	•		
P-C--	5120-251-4489	HAMMER, HAND SC-C-539505 (80063)		EA	1	•	•	•	•		
P-C--	2540-846-8483	LADDER, VEHICLE, BOARDING MX-3543/G		EA	1	•	•	•	•		
P-C--	6240-299-7250	LAMP, FLOURESCENT SC-C-539495 (80063)		EA	5	•	•	•	•	5-2	DS10, DS11, DS12, DS17, DS18
P-C--	6240-635-9753	LAMP, GLOW NE-34 (81349)		EA	1	•	•	•	•	5-2	DS19
P-C--	6240-223-9100	LAMP, GLOW NE-51 (81349)		EA	9	•	•	•	•	5-2	DS1 thru DS9
P-C--	6240-274-4027	LAMP, INCANDESCENT 25T8DC (24455)		EA	4	•	•	•	•	5-2	DS13 thru DS16

SECTION II. REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE (CONTINUED)

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATIONS (a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
P-C--	6240-143-3070	LAMP, INCANDESCENT, F/EXTENSION LIGHT 50W/RS (24455)		EA	1	•	•	•	•		
P-O--	6250-995-9074	LAMPHOLDER 12-240 (72619)		EA	4	•	•	•	•	5-2	XDS13 thru XDS16
P-O--	6250-175-2599	LAMPHOLDER 78X491 (24446)		EA	5	•	•	•	•	5-2	XDS10a, XDS11a, XDS12a, XDS17a, XDS18a
P-O--	6250-227-0317	LAMPHOLDER, INCL STARTER SOCKET 78X736 (24446)		EA	5	•	•	•	•	5-2	XDS10b, XDS11b, XDS12b, XDS17b, XDS18b
P-O--	6250-299-6562	LAMPHOLDER 4109 (74545)		EA	1	•	•	•	•	5-2	XDS19
P-C--	6230-729-9614	LANTERN, ELECTRIC SC-C-539491 (80063)		EA	1	•	•	•	•		
P-C--	5410-752-2525	LEAD, ELECTRICAL, F/GROUND SC-B-539492 (80063)		EA	1	•	•	•	•		
P-C--	6230-239-3518	LIGHT, EXTENSION SC-C-539496 (80063)		EA	1	•	•	•	•		
P-O--	6210-087-4248	LIGHT, INDICATOR 37-0408-0331-245 (72619)		EA	9	•	•	•	•	5-2	XDS1 thru XDS9
P-O--	5940-223-5293	POST BINDING U-106/U		EA	4	•	•	•	•		
P-O--	5410-783-6250	REPAIR KIT, ELECTRICAL EQUIPMENT SHELTER MK-680/G To repair punctures in shelter skin; (Note: To be requisitioned for immediate use only, order direct from depot stock)		EA		•	•	•	•		
P-O--	5975-224-5975	ROD GROUND MX-148/G		EA	1	•	•	•	•		
P-O--	6210-921-6682	SHIELD, FLOURESCENT LIGHT SC-C-539466 (80063)		EA	5	•	•	•	•		
P-O--	6210-930-1217	SHIELD, INCANDESCENT LIGHT, F/COLD START LIGHT SC-C-547186 (80063)		EA	2	•	•	•	•		
P-C--	6250-299-2884	STARTER FLOURESCENT SC-B-539504 (80063)		EA	5	•	•	•	•		
P-O--	5930-202-0878	SWITCH, SENSITIVE BZ2RW822A2 (91929)		EA	1	•	•	•	•	5-2	S1
P-O--	5930-543-8394	SWITCH, TOGGLE MS-25103-23 (81349)		EA	1	•	•	•	•	5-2	S5
P-O--	5930-296-9001	SWITCH, TOGGLE 5521-1 (08806)		EA	3	•	•	•	•	5-2	S2, S3, S4
P-O--	5935-999-6934	SWITCH AND RECEPTACLE ASSEMBLY 5225 (75382)		EA	2	•	•	•	•	5-2	S6/J6, S7/J7
P-O--	5950-892-8208	TRANSFORMER, CURRENT 3CT11B (93993)		EA	1	•	•	•	•	5-2	T1
P-O--	5340-930-1476	VIEWER, DOOR, MTD IN SHELTER DOOR CB-101 (23404)		EA	1	•	•	•	•		
P-O--	6625-669-5019	VOLTMETER MR36W150ACVVR (81349)		EA	1	•	•	•	•	5-2	M1

SECTION III. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE (a) 1-20	(6) (b) 21-50	(6) (c) 51-100	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(7) (b) 21-50	(7) (c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO.	(10) (b) ITEM NO. OR REFERENCE DESIGNATION
	5820-868-8211	RADIO REPEATER SET AN/TRC-113 (This item is nonexpendable)													
P-O--	6625-854-6787	AMMETER MR36W100ACAAR (81349)		EA	1	•	•	•	•	•	•	•	•	5-2	M2
P-O--	5920-930-2307	ARRESTER, LIGHTNING, MTD IN VIDEO ENT BOX SC-B-547223 (80063)		EA	6	•	•	•	•	•	•	•	•		
P-C--	5110-293-2339	AXE, SINGLE BIT SC-C-539451 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-O--	6250-804-3449	BALLAST, LAMP, F/FLUORESCENT 890457D (08806)		EA	5	•	•	•	•	•	•	•	•		
P-O--	4510-595-4085	BRACKET, F/FIRE EXTINGUISHER SC-C-539468 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-C--	7520-281-5917	BASKET WASTEPAPER SC-D-539454 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-O--	5925-703-6084	BREAKER, CIRCUIT QO-250 (90211)		EA	1	•	•	•	•	•	•	•	•	5-2	CB8
P-O--	5925-583-7941	BREAKER, CIRCUIT QO-120 (90211)		EA	1	•	•	•	•	•	•	•	•	5-2	CB6
P-O--	5925-815-6657	BREAKER, CIRCUIT QO-1515 (90211)		EA	2	•	•	•	•	•	•	•	•	5-2	CB3, CB7
P-O--	5925-818-4811	BREAKER, CIRCUIT QO-115 (90211)		EA	4	•	•	•	•	•	•	•	•	5-2	CB1, CB2, CB4, CB5
P-O--	5925-681-4952	BREAKER, CIRCUIT 105-210-101 (79405)		EA	1	•	•	•	•	•	•	•	•	5-2	CB9
P-C--	7920-178-8315	BRUSH, DUSTING, BENCH SC-C-539469 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-O--	6145-945-1864	CABLE, POWER, ELECTRICAL 4158R004 (71102)		FT	40	•	•	•	•	•	•	•	•		
P-O--	6145-660-8711	CABLE, RADIOFREQUENCY RG-8A/U		FT	10	•	•	•	•	•	•	•	•		
P-O--	6145-161-0913	CABLE, RADIOFREQUENCY RG-62A/U		FT	150	•	•	•	•	•	•	•	•		
P-O--		CABLE, RADIOFREQUENCY SC-C-547168 (80063)		FT	40	•	•	•	•	•	•	•	•		
P-C--	5995-926-7831	CABLE ASSEMBLY, POWER, ELECTRICAL CX-7453A/U 100 FT LG		EA	1	•	•	•	•	•	•	•	•		
P-O--	5940-283-5393	CAP, ELECTRICAL F/U-106/U SC-C-76202-1 (80063)		EA	4	•	•	•	•	•	•	•	•		
P-O--	5935-133-8713	CAP, ELECTRICAL CONNECTOR CW-282A/U		EA	62	•	•	•	•	•	•	•	•		
P-C-B	6645-800-7094	CLOCK, AIRCRAFT, MECHANICAL SC-C-539475 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-O--	5935-660-4302	CONNECTOR, PLUG, ELECTRICAL UG-573B/U		EA	3	•	•	•	•	•	•	•	•		
P-O--	5935-837-5966	CONNECTOR, PLUG, ELECTRICAL UG-710B/U		EA	3	•	•	•	•	•	•	•	•		
P-O--	5935-636-7145	CONNECTOR, PLUG, ELECTRICAL UP-121/M		EA	9	•	•	•	•	•	•	•	•		
P-O--	5935-771-2262	CONNECTOR, PLUG, ELECTRICAL MS-3116F12-10P (96906)		EA	5	•	•	•	•	•	•	•	•		
P-O--	5935-405-9232	CONNECTOR, PLUG, ELECTRICAL MS-3116F12-8P (96906)		EA	5	•	•	•	•	•	•	•	•		
P-O--	5935-134-5646	CONNECTOR, RADIOFREQUENCY UG-1375/U		EA	3	•	•	•	•	•	•	•	•		
P-O--	5935-045-9832	CONNECTOR, RECEPTACLE, ELECTRICAL U-187A/G F/SIGNAL CABLES		EA	2	•	•	•	•	•	•	•	•		

SECTION III. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE (a) 1-20	(6) (b) 21-50	(6) (c) 51-100	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(7) (b) 21-50	(7) (c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO.	(10) (b) ITEM NO. OR REFERENCE DESIGNATION
P-O--	5935-064-5732	CONNECTOR, RECEPTACLE, ELECTRICAL U-238B/G		EA	2	•	•	•	•	•	•	•	•	5-2	J1, J2
P-O--	5905-968-4885	CONNECTOR, RECEPTACLE, ELECTRICAL UG-260B/U		EA	62	•	•	•	•	•	•	•	•		
P-O--		CONNECTOR, RECEPTACLE, ELECTRICAL MS-3116F12-8S (96906)		EA	6	•	•	•	•	•	•	•	•		
P-O--	5935-947-2925	CONNECTOR, RECEPTACLE, ELECTRICAL, MTD IN VEDIO ENT BOX; MALE SM-C-194239Gr2 (80063)		EA	3	•	•	•	•	•	•	•	•		
P-O--	5935-947-2925	CONNECTOR, RECEPTACLE, ELECTRICAL, MTD IN VEDIO ENT BOX; FEMALE SM-C-194240Gr2 (80063)		EA	3	•	•	•	•	•	•	•	•		
P-O--	5935-762-1495	CONNECTOR, RECEPTACLE, ELECTRICAL MS-3116F12-10S (96906)		EA	6	•	•	•	•	•	•	•	•		
P-O--		CONNECTOR, RECEPTACLE, ELECTRICAL MS-3116F8-3S (96906)		EA	6	•	•	•	•	•	•	•	•		
P-O--	5935-949-5244	CONNECTOR, RECEPTACLE, ELECTRICAL, MTD IN VEDIO ENT BOX; MALE 13739 (91737)		EA	14	•	•	•	•	•	•	•	•		
P-O--	5935-930-1210	CONNECTOR, RECEPTACLE, ELECTRICAL, MTD IN VEDIO ENT BOX; FEMALE 13738 (91737)		EA	14	•	•	•	•	•	•	•	•		
P-O--	5935-982-9711	CONNECTOR, RECEPTACLE, ELECTRICAL 5261 (74545)		EA	1	•	•	•	•	•	•	•	•	5-2	J17
P-O--	5935-484-5033	CONNECTOR, RECEPTACLE, ELECTRICAL PT06B-12-3S (09922)		EA	3	•	•	•	•	•	•	•	•		
P-O--	5935-283-4003	CONNECTOR, RECEPTACLE, ELECTRICAL 5262 (74545)		EA	10	•	•	•	•	•	•	•	•	5-2	J3, J4, J6, J10 thru J16
P-O--	5935-933-3454	CONNECTOR, RECEPTACLE, ELECTRICAL 5361 (74545)		EA	2	•	•	•	•	•	•	•	•	5-2	J5, J9
P-O--	5975-947-3068	COVER, ELECTRICAL, F/J3 MTD IN PWR ENT BOX M3780-FS (21873)		EA	1	•	•	•	•	•	•	•	•		
P-C-R	4210-270-4512	EXTINGUISHER, FIRE SC-C-539482 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-C--	5120-293-2696	EXTRACTOR, ELECTRON TUBE, F/7 PN SC-B-539547 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-C--	5120-293-2692	EXTRACTOR, ELECTRON TUBE, F/9 PN SC-B-539548 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-O--	5910-850-4412	FILTER, POWER SP-289 (81831)		EA	2	•	•	•	•	•	•	•	•	5-2	FL1, FL2
P-O--	5910-553-6096	FILTER, POWER, F/FLUORESCENT SC-C-33033-4 (80063)		EA	5	•	•	•	•	•	•	•	•	5-2	FL5 thru FL9
P-C--	5120-946-5148	GRIP, CABLE, JAW, SIGNAL SC-B-539992 (80063)		EA	2	•	•	•	•	•	•	•	•		
P-C--	5120-946-5114	GRIP, CABLE, JAW, POWER SC-B-539993 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-C--	5120-251-4489	HAMMER, HAND SC-C-539505 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-C--	2540-846-8483	LADDER, VEHICLE, BOARDING MX-3543/G		EA	1	•	•	•	•	•	•	•	•		
P-C--	6240-299-7250	LAMP, FLUORESCENT SC-C-539495 (80063)		EA	5	•	•	•	•	•	•	•	•	5-2	DS10, DS11, DS12, DS17, DS18
P-C--	6240-635-9753	LAMP, GLOW NE-34 (81349)		EA	1	•	•	•	•	•	•	•	•	5-2	DS19
P-C--	6240-223-9100	LAMP, GLOW NE-51 (81349)		EA	9	•	•	•	•	•	•	•	•	5-2	DS1 thru DS9
P-C--	6240-274-4027	LAMP, INCANDESCENT 28T8DC (24455)		EA	4	•	•	•	•	•	•	•	•	5-2	DS13 thru DS16

SECTION III. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE			(7) 30-DAY GS MAINT ALLOWANCE			(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS	
						(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100			(a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
P-C--	6240-143-3070	LAMP, INCANDESCENT, F/EXTENSION LIGHT 50W/RS (24455)		EA	1	•	•	•	•	•	•	•	•		
P-O--	6250-995-9074	LAMPHOLDER 12-240 (72619)		EA	4	•	•	•	•	•	•	•	•	5-2	X"S13 thru XDS16
P-O--	6250-175-2559	LAMPHOLDER T8 X 491 (24446)		EA	5	•	•	•	•	•	•	•	•	5-2	XDS10a, XDS11a, XDS12a, XDS17a, XDS18a
P-O--	6250-227-0317	LAMPHOLDER, INCL STARTER SOCKET T8 X 736 (24446)		EA	5	•	•	•	•	•	•	•	•	5-2	XDS10b, XDS11b, XDS12b, XDS17b, XDS18b
P-O--	6250-299-6562	LAMPHOLDER 4109 (74545)		EA	1	•	•	•	•	•	•	•	•	5-2	XDS19
P-C--	6230-729-9614	LANTERN, ELECTRIC SC-C-539491 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-C--	5410-752-2525	LEAD, ELECTRICAL, F/GROUND SC-B-539492 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-C--	6230-239-3518	LIGHT, EXTENSION SC-C-539496 (80063)		EA	1	•	•	•	•	•	•	•	•		
P-O--	6210-087-4248	LIGHT, INDICATOR 37-0408-0331-245 (72619)		EA	9	•	•	•	•	•	•	•	•	5-2	XDS1 thru XDS9
P-E--	5410-973-2936	MAINTENANCE KIT, ELECTRONIC EQUIPMENT SHELTER MK-679/G TO REPAIR PUNCTURES IN SHELTER SKIN (NOTE: To be requisitioned for immediate use only, order direct from depot stock)		EA					•	•	•		•		
P-O--	5940-223-5293	POST BINDING U-106/U		EA	4	•	•	•	•	•	•	•	•		
P-O--	5410-783-6250	REPAIR KIT, ELECTRICAL EQUIPMENT SHELTER MK-680/G, TO REPAIR PUNCTURES IN SHELTER SKIN (NOTE: To be requisitioned for immediate use only, order direct from depot stock)											•		
P-F--	5410-771-3354	REPAIR KIT, ELECTRICAL EQUIPMENT SHELTER MK-681/G, TO REPAIR PUNCTURES IN SHELTER SKIN (NOTE: To be requisitioned for immediate use only, order direct from depot stock)		EA	•	•	•						•		
P-C--	5975-224-5975	ROD GROUND MX-148/G		EA	1	•	•	•	•	•	•	•	•		
P-O--	6210-921-6682	SHIELD, FLUORESCENT LIGHT SC-C-539466 (80063)		EA	5	•	•	•	•	•	•	•	•		
P-O--	6210-930-1217	SHIELD, INCANDESCENT LIGHT, F/COLD START LIGHT SC-C-547186 (80063)		EA	2	•	•	•	•	•	•	•	•		
P-C--	6250-299-2884	STARTER FLUORESCENT SC-B-539504 (80063)		EA	5	•	•	•	•	•	•	•	•		
P-O--	5930-202-0878	SWITCH, SENSITIVE BZ2RW822A2 (91929)		EA	1	•	•	•	•	•	•	•	•	5-2	S1
P-O--	5930-543-8394	SWITCH, TOGGLE MS-25103-23 (81349)		EA	1	•	•	•	•	•	•	•	•	5-2	S5
P-O--	5930-296-9001	SWITCH, TOGGLE 5521-1 (08806)		EA	3	•	•	•	•	•	•	•	•	5-2	S2, S3, S4
P-O--	5935-999-6934	SWITCH AND RECEPTACLE ASSEMBLY 5225 (75582)		EA	2	•	•	•	•	•	•	•	•	5-2	S6/J8, S7/J7
P-O--	5950-892-8208	TRANSFORMER, CURRENT 3CT11B (93993)		EA	1	•	•	•	•	•	•	•	•	5-2	T1

SECTION III. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	(3) USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE			(7) 30-DAY GS MAINT ALLOWANCE			(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS	
						(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100			(a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
P-O--	5340-930-1476	VIEWER, DOOR, MTD IN SHELTER DOOR CB-101 (23404)		EA	1	*	*	*	*	*	*	*	*		
P-O--	6625-669-5019	VOLTMETER MR36W150ACVVR (81349)		EA	1	*	*	*	*	*	*	*	*	5-2	M1

SECTION IV. INDEX-FEDERAL STOCK NUMBER AND REFERENCE NUMBER CROSS REFERENCE TO FIGURE AND ITEM NUMBER OR REFERENCE DESIGNATION

FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION
5910-553-6096	5-2	FL5
5910-553-6096	5-2	FL6
5910-553-6096	5-2	FL7
5910-553-6096	5-2	FL8
5910-553-6096	5-2	FL9
5910-850-4412	5-2	FL1
5910-850-4412	5-2	FL2
5925-583-7941	5-2	CB6
5925-681-4952	5-2	CB9
5925-703-6084	5-2	CB8
5925-815-6657	5-2	CB3
5925-815-6657	5-2	CB7
5925-818-4811	5-2	CB1
5925-818-4811	5-2	CB2
5925-818-4811	5-2	CB4
5925-818-4811	5-2	CB5
5930-202-0878	5-2	S1
5930-296-9001	5-2	S2
5930-296-9001	5-2	S3
5930-296-9001	5-2	S4
5930-543-8394	5-2	S5
5935-064-5732	5-2	J1
5935-064-5732	5-2	J2
5935-283-4003	5-2	J3
5935-283-4003	5-2	J4
5935-283-4003	5-2	J6
5935-283-4003	5-2	J10
5935-283-4003	5-2	J11
5935-283-4003	5-2	J12
5935-283-4003	5-2	J13
5935-283-4003	5-2	J14
5935-283-4003	5-2	J15
5935-283-4003	5-2	J16
5935-933-3454	5-2	J5
5935-933-3454	5-2	J9
5935-982-9711	5-2	J17
5935-999-6934	5-2	S6/J8
5935-999-6934	5-2	S7/J7
5950-892-8208	5-2	T1
6210-087-4248	5-2	XDS1
6210-087-4248	5-2	XDS2
6210-087-4248	5-2	XDS3
6210-087-4248	5-2	XDS4
6210-087-4248	5-2	XDS5
6210-087-4248	5-2	XDS6
6210-087-4248	5-2	XDS7
6210-087-4248	5-2	XDS8
6210-087-4248	5-2	XDS9
6240-223-9100	5-2	DS1
6240-223-9100	5-2	DS2
6240-223-9100	5-2	DS3
6240-223-9100	5-2	DS4
6240-223-9100	5-2	DS5
6240-223-9100	5-2	DS6
6240-223-9100	5-2	DS7
6240-223-9100	5-2	DS8
6240-223-9100	5-2	DS9
6240-274-4027	5-2	DS13
6240-274-4027	5-2	DS14
6240-274-4027	5-2	DS15
6240-274-4027	5-2	DS16
6240-299-7250	5-2	DS10
6240-299-7250	5-2	DS11
6240-299-7250	5-2	DS12
6240-299-7250	5-2	DS17
6240-299-7250	5-2	DS18
6240-635-9753	5-2	DS19
6250-175-2559	5-2	XDS10a
6250-175-2559	5-2	XDS11a
6250-175-2559	5-2	XDS12a

SECTION IV. INDEX-FEDERAL STOCK NUMBER AND REFERENCE NUMBER CROSS REFERENCE TO FIGURE AND ITEM NUMBER OR REFERENCE DESIGNATION (CONTINUED)

FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION	FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION
6250-175-2559	5-2	XDS17a			
6250-175-2559	5-2	XDS18a			
6250-227-0317	5-2	XDS10b			
6250-227-0317	5-2	XDS11b			
6250-227-0317	5-2	XDS12b			
6250-227-0317	5-2	XDS17b			
6250-227-0317	5-2	XDS18b			
6250-299-6562	5-2	XDS19			
6250-995-9074	5-2	XDS13			
6250-995-9074	5-2	XDS14			
6250-995-9074	5-2	XDS15			
6250-995-9074	5-2	XDS16			
6625-669-5019	5-2	M1			
6625-854-6787	5-2	M2			

SECTION V. INDEX-REFERENCE DESIGNATION CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER
CB1	C-5, C-8	FL9	C-6, C-9	XDS9	C-7, C-10
CB2	C-5, C-8	J1	C-6, C-9	XDS10a	C-7, C-10
CB3	C-5, C-8	J2	C-6, C-9	XDS10b	C-7, C-10
CB4	C-5, C-8	J3	C-6, C-9	XDS11a	C-7, C-10
CB5	C-5, C-8	J4	C-6, C-9	XDS11b	C-7, C-10
CB6	C-5, C-8	J5	C-6, C-9	XDS12a	C-7, C-10
CB7	C-5, C-8	J6	C-6, C-9	XDS12b	C-7, C-10
CB8	C-5, C-8	J9	C-6, C-9	XDS13	C-7, C-10
CB9	C-5, C-8	J10	C-6, C-9	XDS14	C-7, C-10
DS1	C-6, C-9	J11	C-6, C-9	XDS15	C-7, C-10
DS2	C-5, C-9	J12	C-6, C-9	XDS16	C-7, C-10
DS3	C-6, C-9	J13	C-6, C-9	XDS17a	C-7, C-10
DS4	C-6, C-9	J14	C-6, C-9	XDS17b	C-7, C-10
DS5	C-6, C-9	J15	C-6, C-9	XDS18a	C-7, C-10
DS6	C-6, C-9	J16	C-6, C-9	XDS18b	C-7, C-10
DS7	C-6, C-9	J17	C-6, C-9	XDS19	C-7, C-10
DS8	C-6, C-9	M1	C-7, C-11		
DS9	C-6, C-9	M2	C-5, C-8		
DS10	C-6, C-9	S1	C-7, C-10		
DS11	C-6, C-9	S2	C-7, C-10		
DS12	C-6, C-9	S3	C-7, C-10		
DS13	C-6, C-9	S4	C-7, C-10		
DS14	C-6, C-9	S5	C-7, C-10		
DS15	C-6, C-9	S6/J8	C-7, C-10		
DS16	C-6, C-9	S7/J7	C-7, C-10		
DS17	C-6, C-9	T1	C-7, C-10		
DS18	C-6, C-9	XDS1	C-7, C-10		
DS19	C-6, C-9	XDS2	C-7, C-10		
FL1	C-6, C-9	XDS3	C-7, C-10		
FL2	C-6, C-9	XDS4	C-7, C-10		
FL5	C-6, C-9	XDS5	C-7, C-10		
FL6	C-6, C-9	XDS6	C-7, C-10		
FL7	C-6, C-9	XDS7	C-7, C-10		
FL8	C-6, C-9	XDS8	C-7, C-10		

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- MDW (1)
- Armies (2)
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- 1st Cav Div (3)
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- USASESS (20)
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- USAIS (2)
- USAES (2)
- USAINTS (3)
- WRAMC (1)
- USACDCEC (10)
- Ft Gordon (10)
- Ft Huachuca (10)
- WSMR (3)
- Ft Carson (15)
- Ft Richardson (ECOM Ofc) (2)
- Army Dep (2) except
  - LBAD (14)
  - SAAD (30)
  - TOAD (14)
  - LEAD (7)
  - NAAD (5)
  - SVAD (5)
- Gen Dep (2)
- Sig Sec Gen Dep (5)
- Sig Dep (10)
- Sig FLDMS (2)
- ATS (1)
- USAERDAA (2)
- USAERDAW (5)
- USACRREL (2)
- USARMIS (1)
- Units org under fol TOE:
  (2 cys each)
  - 7
  - 11-35
  - 11-37
  - 11-85
  - 11-97
  - 11-237
  - 11-302
  - 11-327
  - 11-347
  - 11-500(AA-AC)
  - 17
  - 29-134
  - 29-136
  - 37
  - 44-235
  - 44-236
  - 44-535
  - 44-536

NG & USAR: None
For explanation of abreviations used, see AR 310-50.

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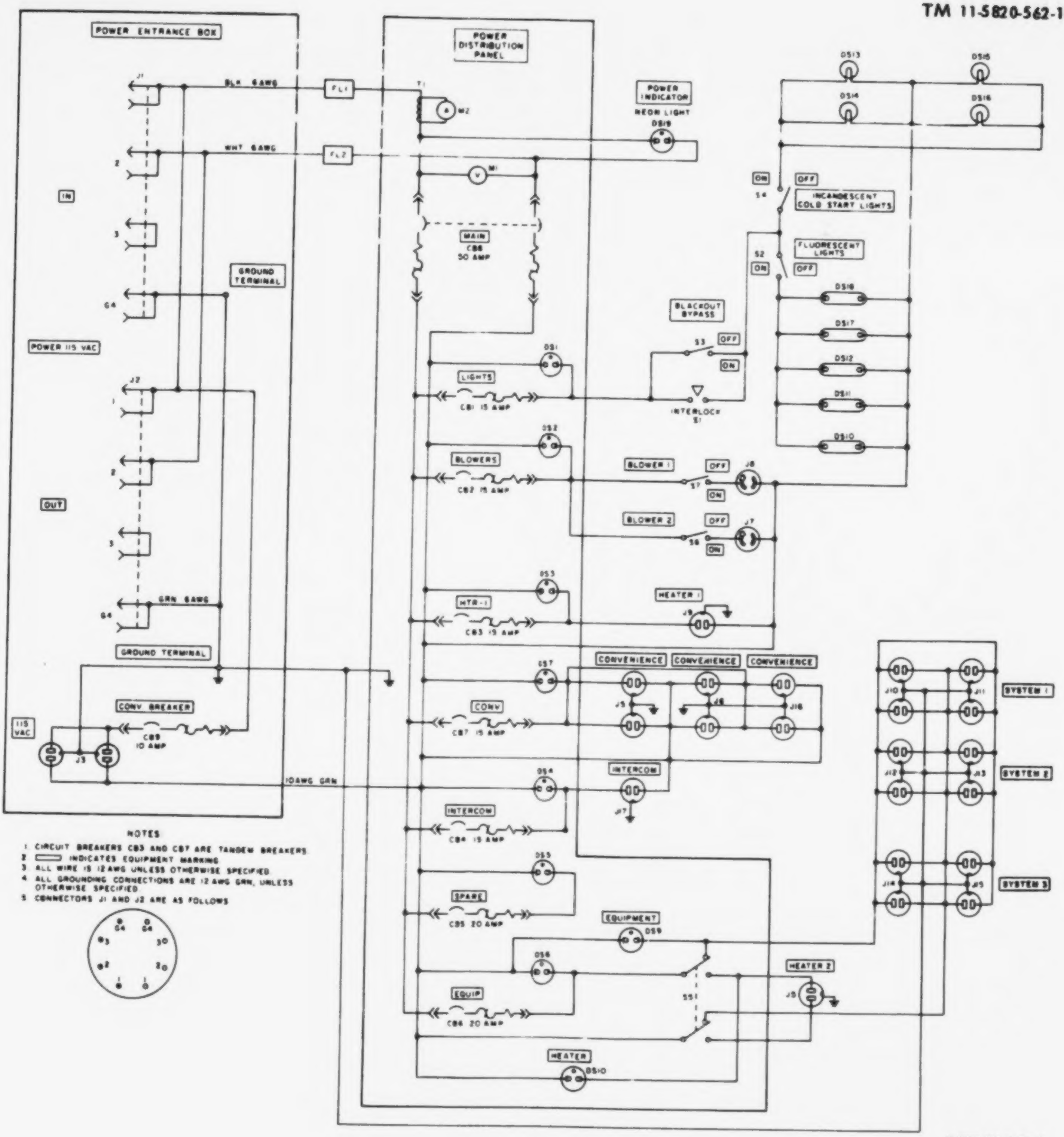
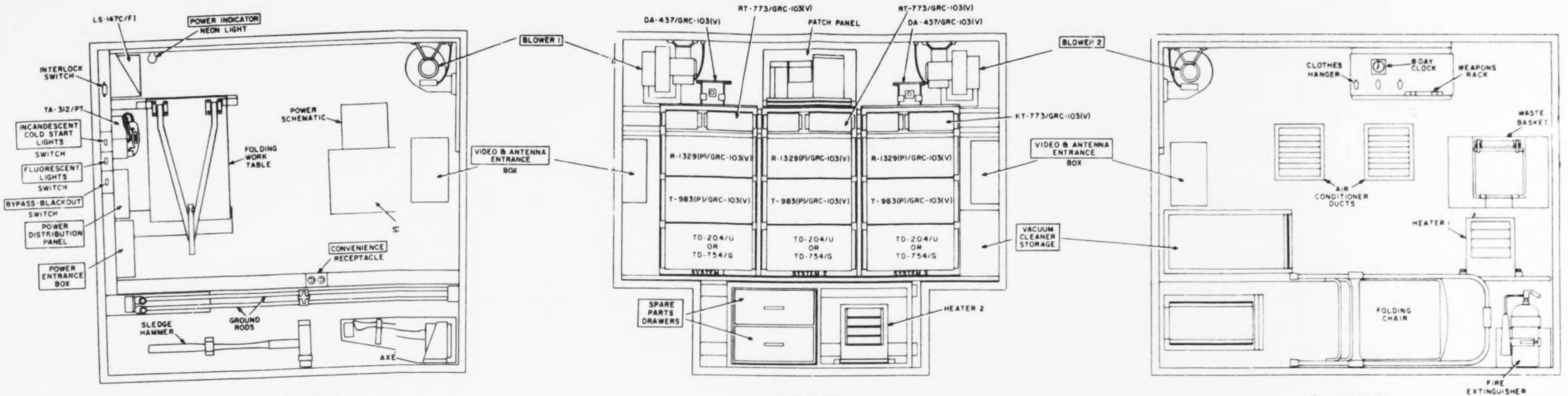

POWER ENTRANCE BOX
J1
2
3
G4
IN
BLK 6AWG
WHT 6AWG
FL1
FL2
GROUND TERMINAL
POWER 115 VAC
J2
1
2
3
G4
OUT
GRN 6AWG
GROUND TERMINAL
CONV BREAKER
CB9 10 AMP
115 VAC
J3
10AWG GRN
POWER DISTRIBUTION PANEL
T1
M2
M1
MAIN
CB8 50 AMP
POWER INDICATOR
NEON LIGHT
DS19
DS1
LIGHTS
CB1 15 AMP
BLACKOUT BYPASS
S3
OFF
ON
INTERLOCK S1
DS2
BLOWERS
CB2 15 AMP
BLOWER 1
OFF
S7
ON
J8
BLOWER 2
OFF
S6
ON
J7
DS3
HTR-1
CB3 15 AMP
HEATER 1
J9
DS7
CONV
CB7 15 AMP
CONVENIENCE
CONVENIENCE
CONVENIENCE
J5
J6
J16
DS4
INTERCOM
J17
INTERCOM
CB4 15 AMP
DS5
SPARE
CB5 20 AMP
EQUIPMENT
DS9
DS6
EQUIP
CB6 20 AMP
S5
HEATER 2
J5
HEATER
DS10
DS13
DS15
DS14
DS16
ON
OFF
S4
INCANDESCENT COLD START LIGHTS
FLUORESCENT LIGHTS
S2
ON
OFF
DS18
DS17
DS12
DS11
DS10
J10
J11
SYSTEM 1
J12
J13
SYSTEM 2
J14
J15
SYSTEM 3
G4
G4
3
3
2
2
1
1
EL5820-562-14-TM-47

NOTES

1 CIRCUIT BREAKERS CB3 AND CB7 ARE TANDEM BREAKERS
2 ▭ INDICATES EQUIPMENT MARKING
3 ALL WIRE IS 12 AWG UNLESS OTHERWISE SPECIFIED
4 ALL GROUNDING CONNECTIONS ARE 12 AWG GRN, UNLESS OTHERWISE SPECIFIED
5 CONNECTORS J1 AND J2 ARE AS FOLLOWS

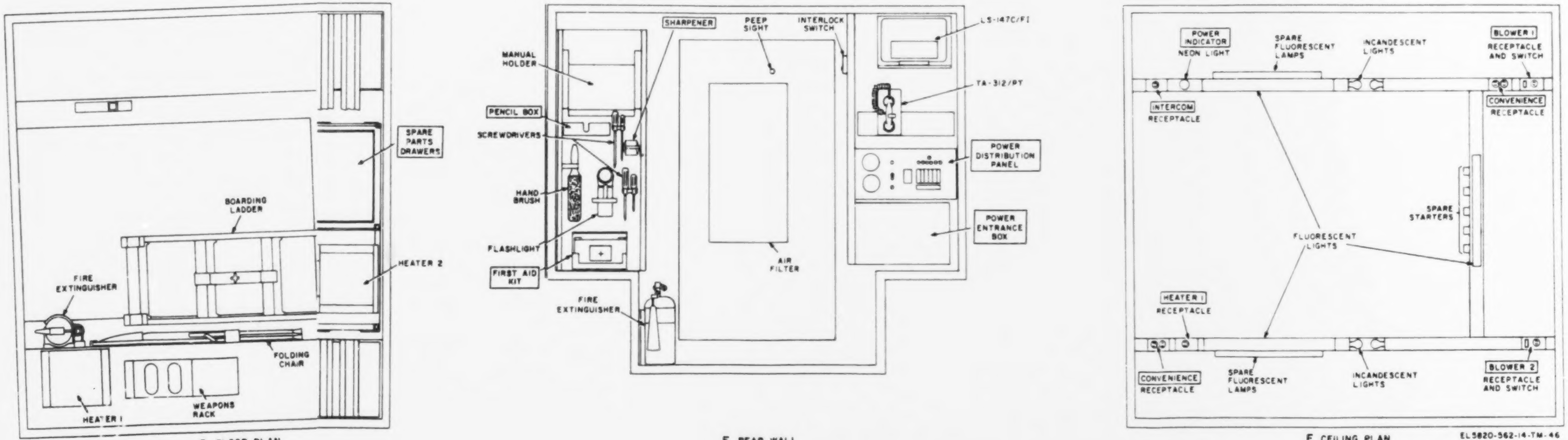
Figure FO-1. Repeater Set, Radio AN / TRC-113, ac power distribution, schematic wiring diagram.


LS-147C/FI
POWER INDICATOR NEON LIGHT
INTERLOCK SWITCH
TA-312/PT
INCANDESCENT COLD START LIGHTS SWITCH
FLUORESCENT LIGHTS SWITCH
BYPASS-BLACKOUT SWITCH
POWER DISTRIBUTION PANEL
POWER ENTRANCE BOX
POWER SCHEMATIC
FOLDING WORK TABLE
CONVENIENCE RECEPTACLE
SLEDGE HAMMER
GROUND RODS
AXE
BLOWER 1
VIDEO & ANTENNA ENTRANCE BOX
DA-437/GRC-103(V)
RT-773/GRC-103(V)
PATCH PANEL
RT-773/GRC-103(V)
DA-437/GRC-103(V)
R-1329(P)/GRC-103(V)
T-983(P)/GRC-103(V)
TD-204/U OR TD-754/G
SYSTEM 1
SYSTEM 2
SYSTEM 3
SPARE PARTS DRAWERS
HEATER 2
RT-773/GRC-103(V)
BLOWER 2
VIDEO & ANTENNA ENTRANCE BOX
VACUUM CLEANER STORAGE
CLOTHES HANGER
8 DAY CLOCK
WEAPONS RACK
WASTE BASKET
AIR CONDITIONER DUCTS
HEATER 1
FOLDING CHAIR
FIRE EXTINGUISHER

A. ROADSIDE WALL

B. FRONT WALL

C. CURBSIDE WALL


SPARE PARTS DRAWERS
BOARDING LADDER
HEATER 2
FIRE EXTINGUISHER
FOLDING CHAIR
HEATER 1
WEAPONS RACK
SHARPENER
PEEP SIGHT
INTERLOCK SWITCH
LS-147C/FI
MANUAL HOLDER
PENCIL BOX
SCREWDRIVERS
HAND BRUSH
FLASHLIGHT
FIRST AID KIT
TA-312/PT
POWER DISTRIBUTION PANEL
POWER ENTRANCE BOX
AIR FILTER
FIRE EXTINGUISHER
POWER INDICATOR NEON LIGHT
SPARE FLUORESCENT LAMPS
INCANDESCENT LIGHTS
BLOWER 1 RECEPTACLE AND SWITCH
INTERCOM RECEPTACLE
CONVENIENCE RECEPTACLE
SPARE STARTERS
FLUORESCENT LIGHTS
HEATER 1 RECEPTACLE
CONVENIENCE RECEPTACLE
SPARE FLUORESCENT LAMPS
INCANDESCENT LIGHTS
BLOWER 2 RECEPTACLE AND SWITCH

D. FLOOR PLAN

E. REAR WALL

F. CEILING PLAN

EL5820-562-14-TM-46

Figure FO-2. Repeater Set, Radio AN/TRC-113, floor plan and elevation diagram.

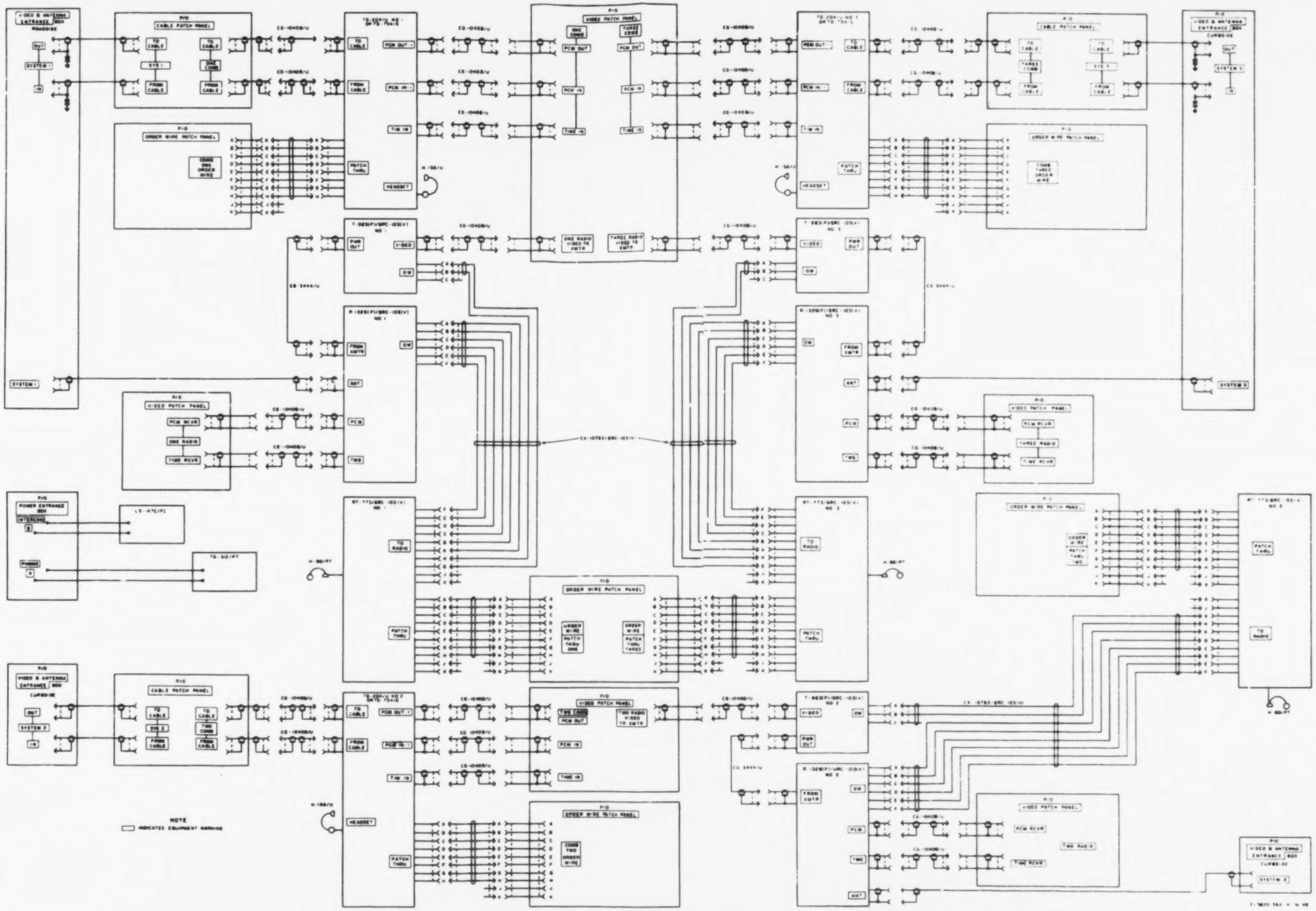
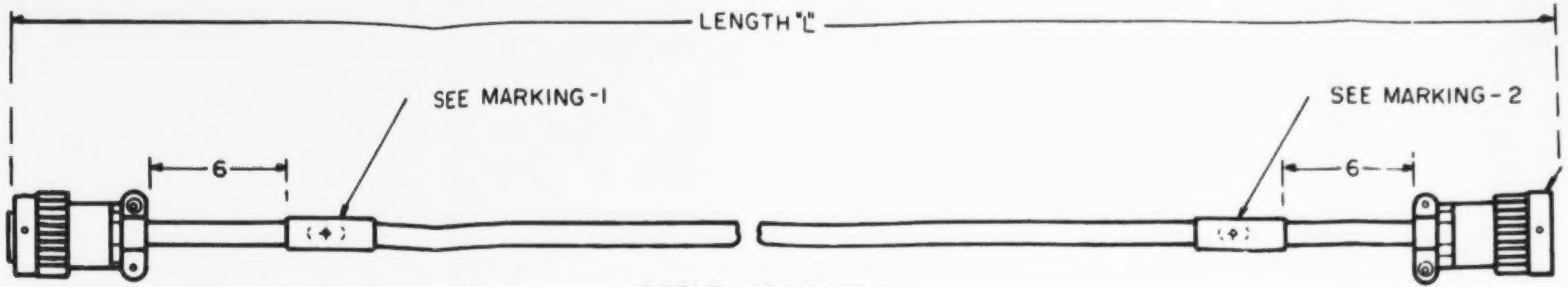
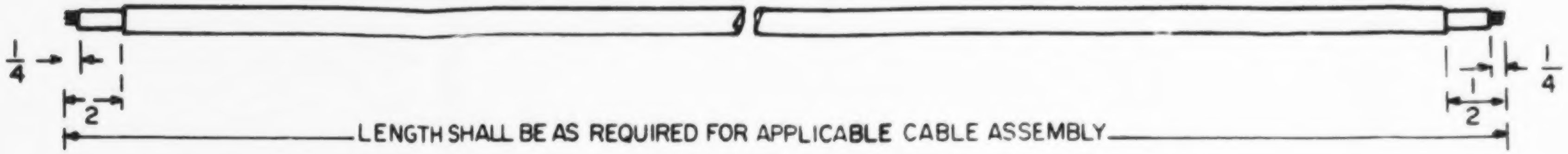

P/O
VIDEO & ANTENNA ENTRANCE BOX
ROADSIDE
OUT
SYSTEM 1
IN
CABLE PATCH PANEL
TO CABLE
SYS 1
FROM CABLE
ONE COMB
CG-1040B/U
TD-204/U NO 1
PCM OUT 1
PCM IN 1
TIME IN
PATCH THRU
HEADSET
H-158/U
ORDER WIRE PATCH PANEL
COMB ONE ORDER WIRE
A
B
C
D
E
F
G
H
J
K
VIDEO PATCH PANEL
ONE COMB
THREE COMB
PCM OUT
PCM IN
ONE RADIO VIDEO TO XMTR
THREE RADIO VIDEO TO XMTR
TD-204/U NO 3
SYS 3
THREE COMB
SYSTEM 3
CURBSIDE
COMB THREE ORDER WIRE
T-983(P)/GRC-103(V) NO 1
PWR OUT
VIDEO
OW
CG-3444/U
R-1329(P)/GRC-103(V) NO 1
FROM XMTR
ANT
PCM
TMG
T-983(P)/GRC-103(V) NO 3
R-1329(P)/GRC-103(V) NO 3
PCM RCVR
ONE RADIO
TIME RCVR
THREE RADIO
CX-10783/GRC-103(V)
POWER ENTRANCE BOX
INTERCOMM
PHONE
LS-167C/PT
TA-312/PT
RT-773/GRC-103(V) NO 1
TO RADIO
H-80/PT
RT-773/GRC-103(V) NO 3
ORDER WIRE PATCH THRU ONE
ORDER WIRE PATCH THRU THREE
ORDER WIRE PATCH THRU WO
RT-773/GRC-103(V) NO 2
VIDEO & ANTENNA ENTRANCE BOX
SYSTEM 2
SYS 2
TWO COMB
TD-204/U NO 2
TWO RADIO VIDEO TO XMTR
T-983(P)/GRC-103(V) NO 2
R-1329(P)/GRC-103(V) NO 2
COMB TWO ORDER WIRE
TWO RADIO
NOTE
INDICATED EQUIPMENT MARKING

Figure FO-3. Repeater Set, Radio AN / TRC-113, signal schematic wiring diagram.


LENGTH "L"
SEE MARKING-1
SEE MARKING-2
6
6

CABLE ASSEMBLY

80063 | SC-D-627083


1/4
2
1/4
1
2
LENGTH SHALL BE AS REQUIRED FOR APPLICABLE CABLE ASSEMBLY

CABLE PREPARATION

Ⓐ

NOTE: THE COMPLETED CABLE ASSEMBLIES SHALL MEET THE FOLLOWING TEST REQUIREMENTS PER MIL-C-3885 AS SPECIFIED BELOW.

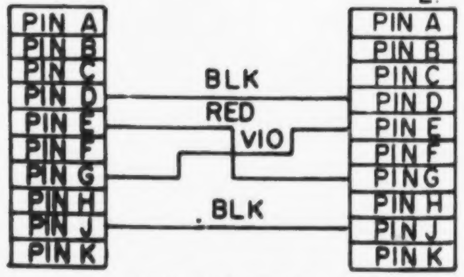
A. PULL OUT LOAD TEST OF 25 POUNDS.

B. END TO END CONTINUITY.

C. DIELECTRIC STRENGTH OF 500 VDC FOR NOT LESS THAN 5 SECONDS.

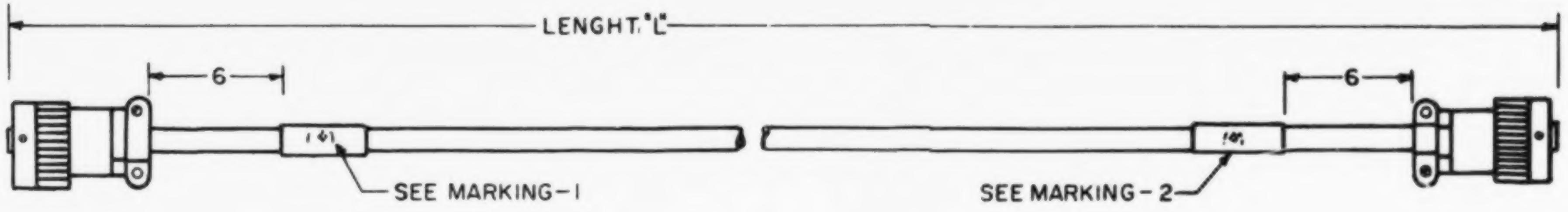
D. INSULATION RESISTANCE OF NOT LESS THAN 100 MEGOHMS.

E. CABLES OVER 2FT IN LENGTH REQUIRE 2 MARKING BANDS.


PIN A
PIN B
PIN C
PIN D
PIN E
PIN F
PIN G
PIN H
PIN J
PIN K
BLK
RED
VIO
BLK
PIN A
PIN B
PIN C
PIN D
PIN E
PIN F
PIN G
PIN H
PIN J
PIN K

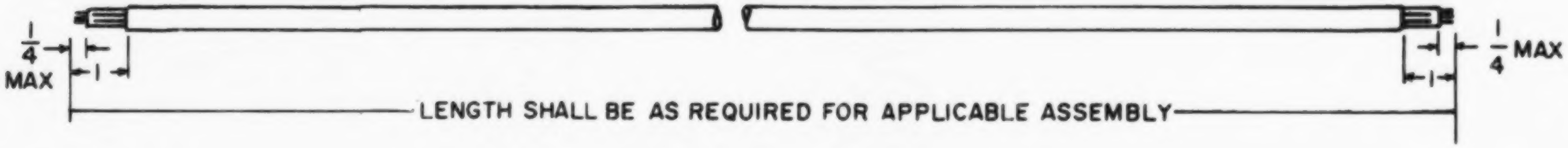
SCHEMATIC

GROUP NO	MARKING - 1	MARKING - 2
I	RADIO REPEATER	—
II	″ ″	RADIO REPEATER


LENGHT "L"
6
6
SEE MARKING-1
SEE MARKING-2

CABLE ASSEMBLY

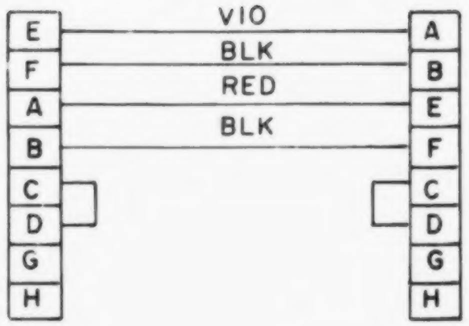
80063 | SC-D-627092


1/4 MAX
1
1
1/4 MAX
LENGTH SHALL BE AS REQUIRED FOR APPLICABLE ASSEMBLY

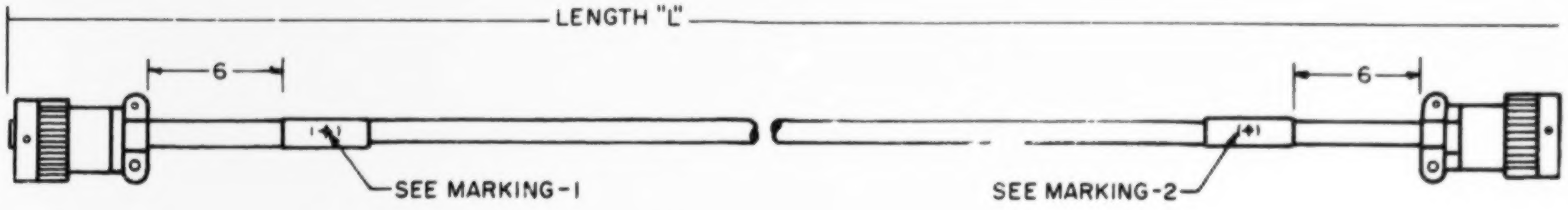
CABLE PREPARATION

GROUP NO.	MARKING-1	MARKING-2
I	CABLE REPEATER	CABLE REPEATER
II	PATCH THRU	PATCH THRU

Ⓑ

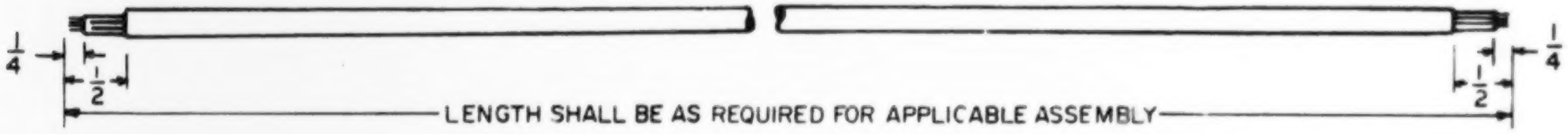

E
F
A
B
C
D
G
H
VIO
BLK
RED
BLK
A
B
E
F
C
D
G
H

SCHEMATIC


LENGTH "L"
6
6
SEE MARKING-1
SEE MARKING-2

CABLE ASSEMBY

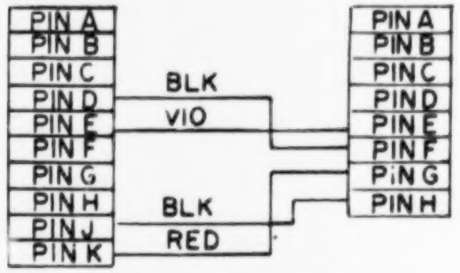
80063 | SC-D-627148


1/4
1/2
1/2
1/4
LENGTH SHALL BE AS REQUIRED FOR APPLICABLE ASSEMBLY

CABLE PREPARATION

GROUP NO	MARKING-1	MARKING-2
I	RADIO-TO-CABLE REPEATER	RADIO-TO-CABLE REPEATER

Ⓒ


PIN A
PIN B
PIN C
PIN D
PIN E
PIN F
PIN G
PIN H
PIN J
PIN K
BLK
VIO
BLK
RED
PIN A
PIN B
PIN C
PIN D
PIN E
PIN F
PIN G
PIN H

SCHEMATIC

EL5820-562-14-TM-49

Figure FO-4. Repeater Set AN/TRC-113, repeater cable repair details.